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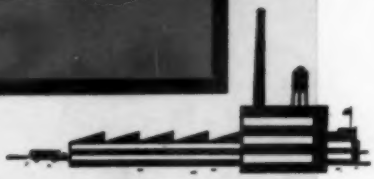

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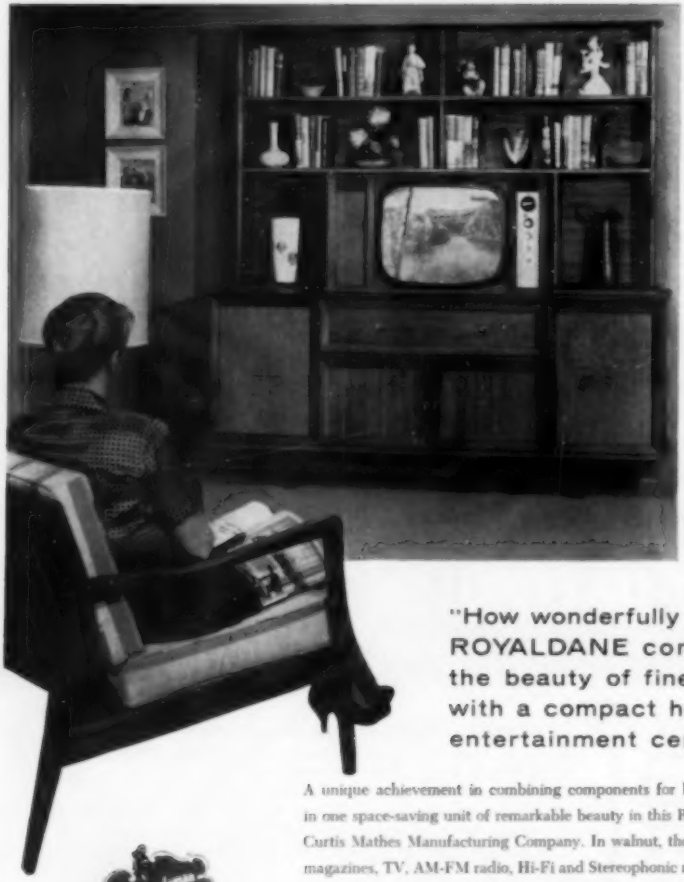

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Industrial FINISHING

W. H. ROHR, Editor P. C. BARDIN, Associate Editor

May, 1960
Vol. XXXVI, No. 7

BPA

A monthly magazine for company executives, production superintendents, process engineers, chemists, purchasing agents, paint shop and finishing department foremen of industrial plants where product surface cleaning and painting are major operations in the manufacture of parts and products of all kinds.

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West Coast Editor
CHAS. R. BROWN

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Accepted as Controlled Circulation Publication at Indianapolis, Indiana

36 THIRTY-SIXTH YEAR OF PUBLICATION

Paint Surface Kills Insects. Now, according to Science Service, the British have come up with a clear lacquer film that kills flies, ants, silverfish, moths, etc. The Leyland Paint & Varnish Co., Ltd., of Lancashire, is marketing a clear lacquer that protects against insects.

The insecticides, which are harmless to humans and animals, are released to the surface as a bloom which kills insects on contact. Its effectiveness in killing insects lasts for at least two years, even when the lacquered surface is washed often.

* * *

Water Off Ink is made for use where markings are temporary and are removed later, or when the work is completed. Since this ink is easily, quickly and completely removed by water, it offers a quick, easy way of making temporary markings.

It gives good adhesion to all metals and most plastics. It is non-corrosive and non-etching to all metals and to most plastics. It is not easily removed by the usual handing of work in progress.

* * *

Pocket Microscope. An accurate, well-made little Measuring Pocket Microscope, no larger than a fountain pen, is finding wide use in industry for measuring and examining objects under 50X magnification. Quality control and production men, inspectors and lab workers use this handy pocket instrument to check for quality control, to detect defects, etc. A product of Edmund Scientific Co., Barrington, New Jersey.

* * *

Save Solvent Cost. It is so easy and often so convenient to use a high priced solvent for ordinary cleaning jobs around the plant. Solvents having special properties for specific purposes may cost more than two dollars a gallon, whereas a rather slow drying cleaning solvent may cost less than a dollar a gallon. Using the high priced solvent, where it is not required, is a waste of money. Even small savings are important.

If you are concerned about employees getting the solvents mixed up, the drums could be painted with identifying colors.

* * *

Burn Proof Wood Veneer. The Fine Hardwoods Association recently has approved Alcoa's new product for bonding foil under face veneer of hardwood furniture panels for their Finishield process, because it gives veneer which is cigarette burn-proof, and highly resistant to heat.

The underlying layer of foil, approximately .0025-in. thick, dissipates

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heat away from a lighted cigarette at a rapid enough rate to prevent scorching of the wood fibers and damage to the surface finish.

Plywood may be upgraded by applying foil to either or both sides of the product for a paint base. The foil will take a long lasting grain-free finish, thus increasing the versatility of the plywood.

"Your ad called for a serious, intelligent and mature young man fresh out of college."

Foamed-in-Place. Use of "foamed-in-place" polyurethane and epoxy resin foam materials to produce forms ranging from structural panels to light seat cushions with high flotation properties were demonstrated by the DuPont Co. at the 1960 Design Engineering Show in New York City, May 23-26.

All of the foamed materials shown can be foamed in place by simple chemical mixing to fill even the most complicated types of forms. Foaming action is induced by "Freon" blowing agent, a nonflammable liquified gas that's a chemical cousin to the "Freon" refrigerants used over the past 30 years in most home refrigerators and air-conditioning equipment.

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Light Without Lamps may be just around the corner. Wallpaper, drapery or windows that glow at night may soon be in use. Science Service reports that electroluminescence may be the most important lighting discovery since the incandescent lamp and the fluorescent tube.

The principle involves the sandwiching of a phosphor film between two electrically conductive surfaces one of which must be translucent. Introduction of electric current energizes the electrons in the phosphor layer to form light.

Electroluminescence is versatile. The light source can be any shape, and by varying the phosphors or by changing the frequency of the alternating current, the color of the light can be changed from white to red, blue, etc.

* * *

Adhesive Coated Foil. Aluminum foil, coated with an adhesive which bonds it permanently to plastics, plywood and other wood products, is a new product development of Aluminum Co. of America.

When bonded to wood or plastic products, the coated foil may serve as a moisture barrier, decorative element, a base for paint, a good light reflector, a strengthening agent, or a disperser of heat. One example is the protection of furniture veneers from cigarette burns. Bonding to other materials is made under heat and pressure, usually in a hot press.

* * *

Fiberglass exhaust fans. New fiberglass belt-drive duct fans, which offer exceptional resistance to most corrosive elements common to industrial plants, are described in a bulletin published by the Hartzell Propeller Fan Co., Piqua, Ohio.

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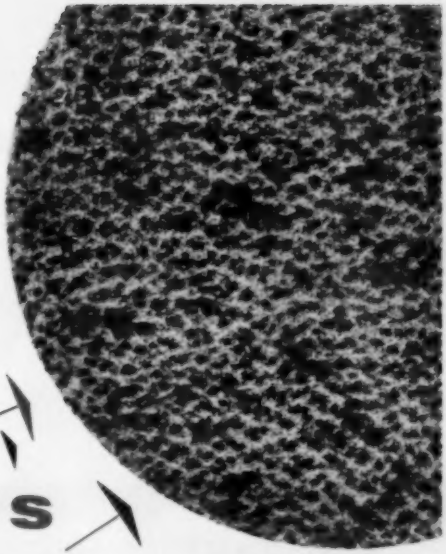

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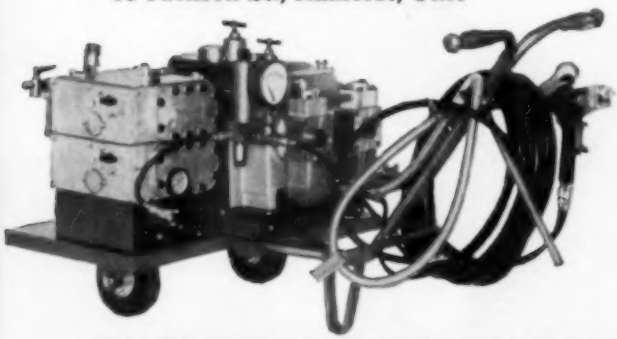

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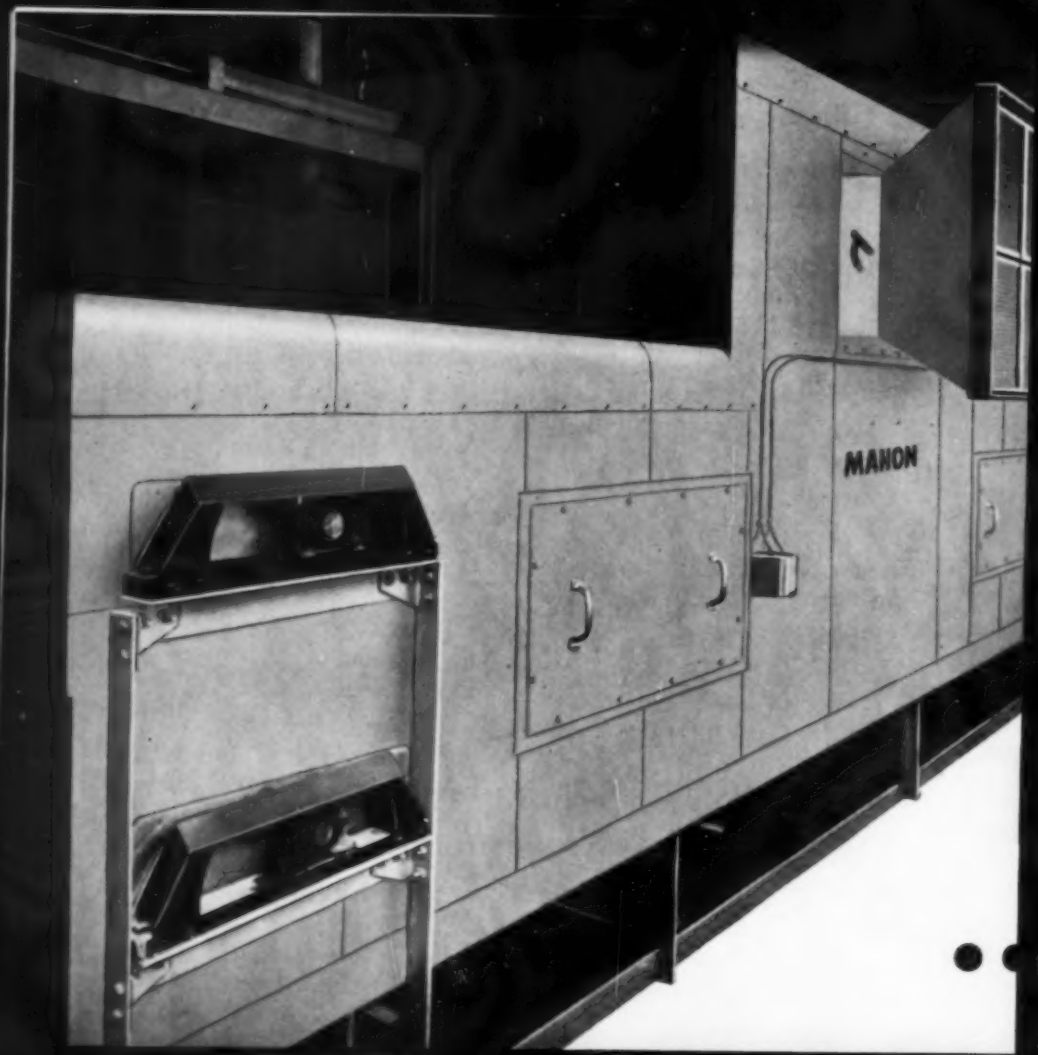

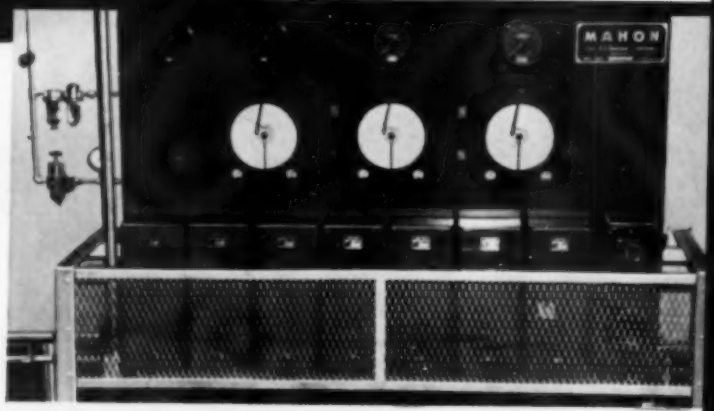

Special oven control panel, designed by Mahon for the Goodyear Tire and Rubber Co., monitors the entire eight-hour curing cycle for the plastic material.

PROCESS EQUIPMENT BY MAHON

new plastic-curing oven system for GOODYEAR is double-decked for efficiency

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The unusual installation (shown at left) is 80-ft. long with double-decked ovens for increased capacity. Specially developed by Mahon and Goodyear engineers, the system features integrated materials handling, precisely controlled heating and rapid cooling. Curing is done at preset temperatures up to 300°F, the ovens holding the plastic sections for about eight hours. At the end of this cycle, the entire system is fast cooled, the work discharged and the ovens brought back up to heat—all automatically.

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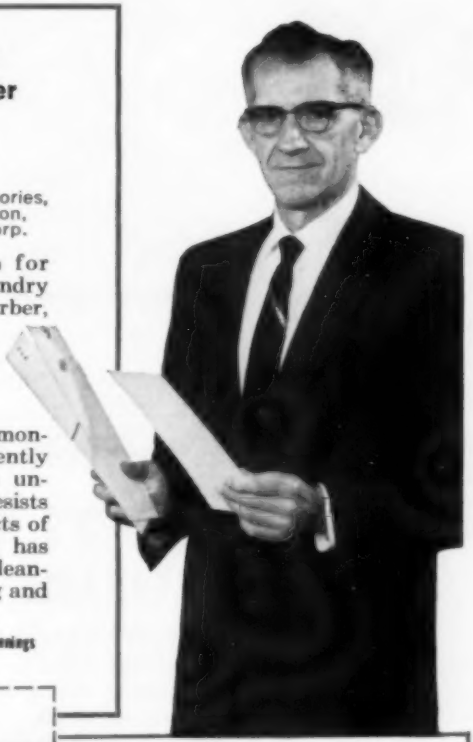

- **"In our continuing research** for better finishes to use on our laundry equipment," continues Mr. Farber, "we have found that this thermo-setting enamel provides a number of important quality improvements.

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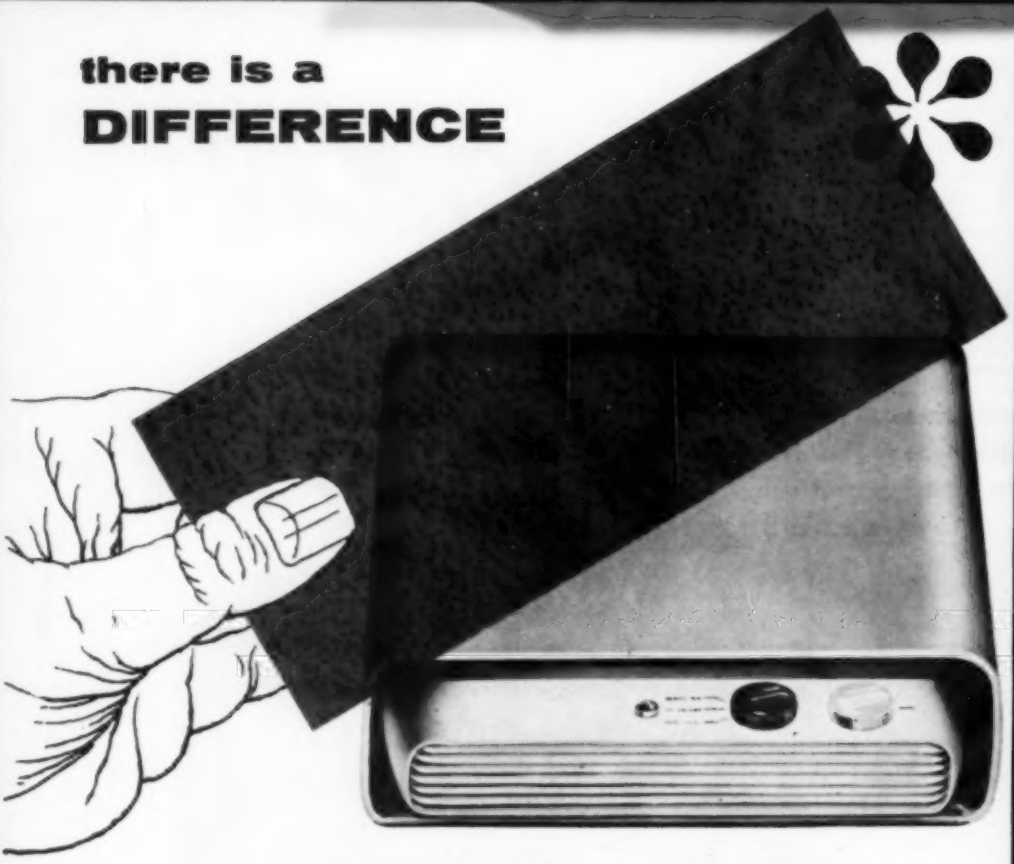

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Industrial FINISHING

May, 1960, Issue

Reader Service Department

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Surfaces to be completely or partially coated for protection, decoration or for any other purpose, include components and articles made of metals, plastics, woods, and composition materials; also paper, leather, rubber and fabrics.

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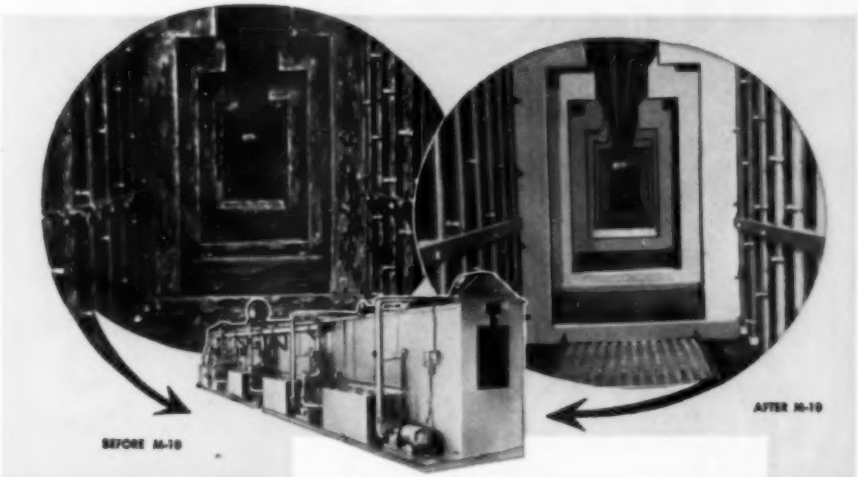

- Prolong equipment life
- Eliminate acid damage to equipment
- Clean all "inaccessible parts"
- No dismantling of equipment necessary
- One material operation — less labor
- No neutralizing necessary — just rinse

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PAINT SKINNING
Its Cause and Prevention

By Karl F. Schreiber, Senior Chemist
Forbes Finishes, Division of Pittsburgh Plate Glass

ONE of the really annoying occurrences in connection with industrial finishing is paint skinning. The phenomenon, wherein a solid film of dried paint forms on the surface of paint in a container is more common with air-drying finishes than with baking types of coating materials. Fortunately, good plant practices can keep this troublesome source of time and material loss down to a minimum.

What Causes Skin to Form on Paint in a Container

To understand what can and should be done to prevent this loss —due to a skin forming over the top surface of the paint—we must first consider the nature of paint and the reasons for a skin forming on the surface of paint in a container. Any typical industrial enamel is a homogeneous mixture of finely dispersed pigments and inerts suspended in a solution of resin and driers. An appropriate blend of solvents is present to dissolve the resin and thereby to ensure a workable viscosity—and to act as a carrier for the other ingredients.

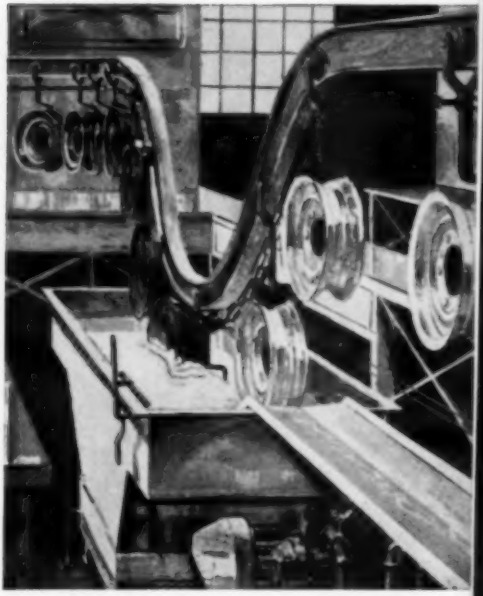
The pigments and inerts function as colorants and specialized fillers respectively. The resin, catalyzed by drier, does the actual drying and hardening of the film. The resin contains drying oils, either alone or in a chemical combination called an alkyd. These oils undergo a chemical reaction with the oxygen of the air. This process links one resin molecule to another to form a high molecular weight film that has hardness, tensile strength, etc. Conventionally we say that the film has dried or cured.

When the finish is applied to a surface such as wood or metal, drying begins, accompanied by evaporation of the solvent. Skinning is exactly the same process, only here we have no solid substrate to which the finish may adhere. Instead, it forms on the surface of the paint in a container and continues to grow in thickness and toughness as more and more air permeates the film and reacts with the underlying resin in the paint.

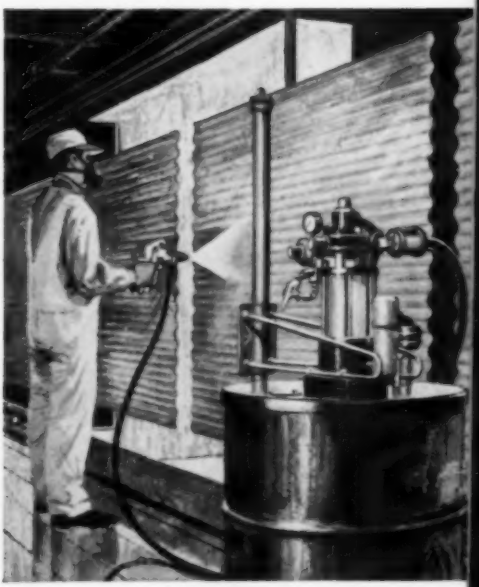
Skin is More Likely to Form On Air-Drying Paints

Air-drying and forced-drying enamels, primers and varnishes, in contrast to baking finishes, must contain a fairly high proportion of drying oils in order to achieve a hardened state with a minimum of heat—or no heat at all. They are, therefore, much more susceptible to

FLOW COATERS give quick, thorough coverage with high paint utilization.



DIP COATERS offer a simple, low-cost way to paint products of varying sizes and shapes.



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skinning than are baking types of finishes. Individual air drying materials will vary in their resistance to skinning, depending upon the type and amount of drying oil present in the resin. In house paint, for example, the resin or vehicle is made up entirely of an oil (usually linseed oil). Accordingly, surface oxidation in the package occurs very readily.

Cellulose lacquers, vinyls, acrylics and unmodified epoxy and silicone enamels, on the other hand, contain no drying oils. The infrequent occurrence of skinning here is due simply to evaporation of solvent which leaves behind the solid constituents of the lacquer in the form of a film.

Store your paints and enamels in well sealed containers and if possible, agitate the drums or pails at frequent intervals.

The other extreme is found in wrinkle finishes. These coatings contain not only a high percentage of oil but also a very reactive oil —tung or China-wood oil. In addition, relatively large amounts of surface drier (cobalt naphthenate) are used. Oxidation with this type of material, therefore, takes place quite readily with the formation of a heavy "hide" unless preventative measures are vigorously employed.

In general, high-solids enamels at high viscosity will have a greater tendency to react than their lower solids counterparts. Similarly, a reduced material will have less tendency to skin simply because less reactive solids are then present.

The formation of a skin over paint in a partially filled container is accelerated by its standing still a long time and also by exposure to air.

What Can be Done to Avoid Or Minimize Skinning

In the final analysis, the possibility of skinning with a given enamel under constant conditions is dependent upon time. The slower the rate of consumption, the longer the exposure to air and solvent evaporation. Therefore, rotation of stock with an eye to using the oldest stock first is prudent.

What additional precautionary measures should be taken? Positive steps include storing paint in well sealed containers, resealing drums after use and avoiding the storage of paint in partially filled containers for protracted periods of time. Periodic agitation is also beneficial since it exposes a new surface to the air.

A 55-gallon drum of an air drying or baking enamel which is left to stand with ten gallons or less of material in it for weeks on end will probably end up with a heavy "hide" of paint. If not detected, the paint may be agitated, in which case the solid top layer will be broken into thousands of individual skins which usually ruin a good many pieces in production. Where

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it is necessary to store a relatively small amount of paint in a drum for weeks, particularly an open-head type, the material should be transferred to 5-gallon pails and effectively sealed, that is, made air-tight by crimping the lid. Reducing an enamel will increase the storage life.

Problem of Keeping Clean Paint in Dip Tanks

The application of an air drying enamel in the dipping process, by its very nature, exposes a considerable quantity of paint to the air. Therefore, covering the dip tank when not in use will reduce the possibility of reaction, as well as keeping the enamel clean. Effective agitation to turn over the surface material is also beneficial and helps to reduce settling. If the dip tank is not going to be used for some time, a quantity of the solvent employed in reduction should be carefully floated on the surface of the paint. This solvent will act as a barrier between the two reactants, the oxygen of the air and the resin. The tank then should be covered to minimize evaporation.

Paint in dip tanks should be continually agitated during production; when not in use the tank should be covered to minimize solvent evaporation.

When dipping operations are under way, precautions must be taken to make sure that any fans near the dip tank are pulling the solvent vapor upward rather than blowing across the surface and thereby evaporating solvent and accelerating skin formation.

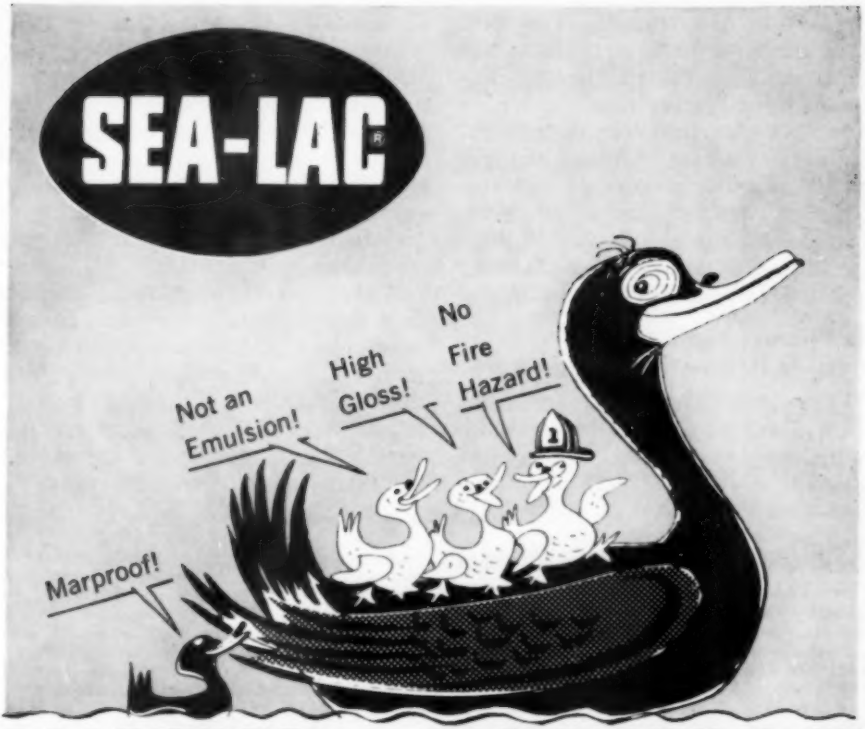
If all of these measures are to no avail, the paint supplier should be consulted. It may be possible to switch to a less reactive vehicle (resin). Or, it may be that an additional amount of anti-skinning agent can be added without impairing the drying.

Heat Can Accelerate the Formation of Skin on Paint

Like any chemical reaction, the drying of paint is accelerated by heat. It follows, therefore, that storage of less than full containers outside during the summer months, when temperatures may build up to 100°F. or more, is undesirable. Similarly where hot-spraying is employed, finishing materials should be drained from the vicinity of the heating elements when not in use.

Recently, the writer was called upon to investigate a complaint that an industrial baking enamel had "turned solid". It was found that the material had skinned and gelled so badly that it was "over the hill". The cause was found to be a system wherein the coating was hot sprayed at 120°F.—a common and desirable procedure. In this instance, however, the enamel was maintained at this relatively high temperature 24 hours a day, with continuous circulation of the entire 55 gallons. Correction of this situation eliminated further trouble.

Skinning is sometimes confused with gelling, and vice-versa. Gelling occurs when the resin itself is unstable or reacts with the pigment



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present in the enamel. The first indication of such a condition is an inordinate rise in viscosity followed by a "stringiness" and poor flow. As the resin continues to react or polymerize, it finally changes to a "livery" or gel-like consistency. This is a phenomenon which takes place throughout the entire body of the paint rather than limiting itself to the surface as in skinning.

Is Enamel Usable After Skin is Removed?

The question frequently arises: Is a paint still usable after skinning has taken place? Unless the amount of surface film formation is excessive in proportion to the volume of paint, the answer generally is in the affirmative, although a slight reduction in gloss should be expected. Careful skimming and straining will usually produce a workable product. However, the cause of the trouble should be ascertained and corrective measures instituted.

The prevention of skinning, therefore depends upon the practice of good plant housekeeping, coupled with an intelligent awareness of the limitations of air-drying finishes. Such a policy pays off in trouble-free operation and increased efficiency in industrial finishing.

DeVilbiss Spray Painting Classes

The field school farthest afield will be held by instructors of The DeVilbiss Co., Toledo, Ohio, in May when they conduct a 2-week spray painting course in Honolulu, Hawaii.

The school will cover, for separate groups, industrial products finishing, maintenance painting, auto refinishing, jobber salesmen training, and a special course for government employees engaged in painting operations. Irvin B. Thomas, Chief instructor, will be in charge of the school.

The addition of the 50th state to its field school schedule will be the high point of a year in which the specialized training in finishing offered by DeVilbiss is expected to set new records.

Last year, more than 1200 students attended courses given by DeVilbiss.

This typical group at a DeVilbiss Co. spray painting school, appeared at Terre Haute, Ind.

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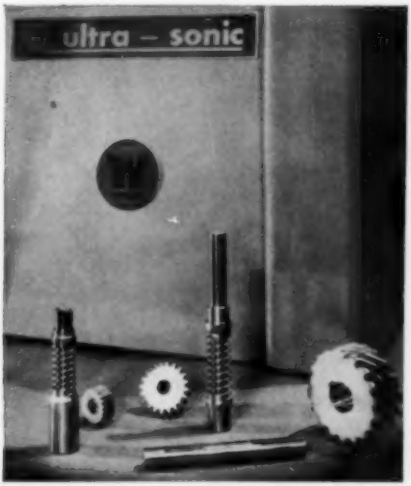

No particle of foreign matter remains after cleaning by Westinghouse Ultrasonics. Removes dirt, chips, cutting oils and buffing compounds from parts that previously required hand brushing.

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J-35014

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PAINTING BED SPRINGS WITH *New Type Flow Coater*

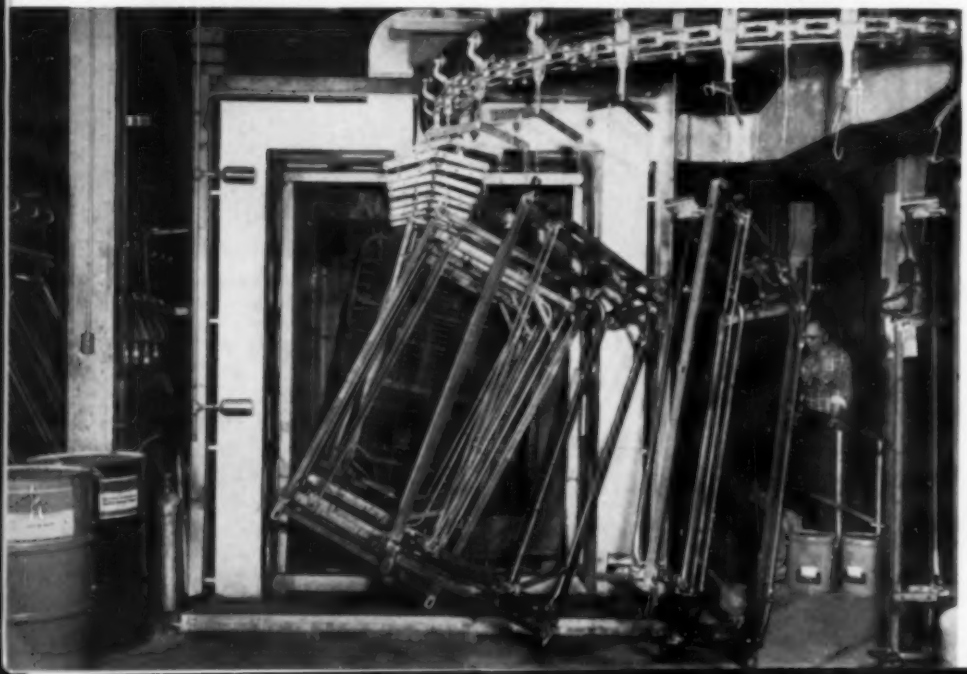
By Paul F. Kunk
Mgr. Product Finishes Div'n.
Standard Industrial Products*

THE UNITED STATES Bedding Co. (King Koil Sleep Products), St. Paul, Minnesota, is a large volume producer of bed springs, mattresses, bunk beds, cots and dual-purpose furniture. In addition to its own diversified product line, the company manufactures spring and metal frame components for many other producers of similar products.

Being a progressive and cost conscious organization, this firm installed a flow coater 32 years ago. The equipment did a yoeman job of applying aluminum enamel to a

*Evansville, Indiana.

Steel bed frames and assembled springs entering the flow coater where they are completely painted by eight streams of paint which shoot up vertically from nozzles mounted in a horizontal reciprocating manifold near the floor. Photos, courtesy of George Koch Sons, Inc.



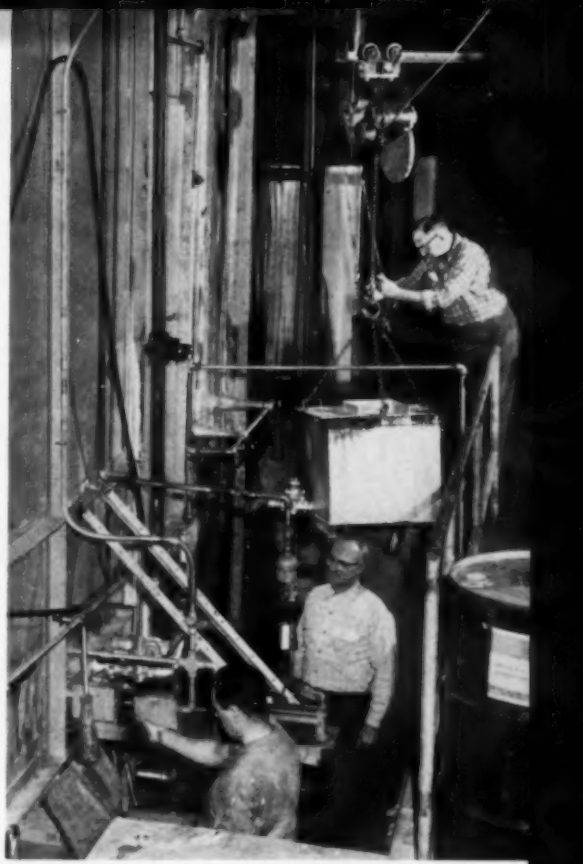
substantial part of the total production, yielding cost savings over dipping and hand spraying, while speeding up the finishing process considerably.

Unfortunately not all of the company's production could be painted in aluminum. Some assemblies, due to their end use, had to be coated in colors that harmonized with upholstery fabrics and natural wood finishes. Then too, some customers didn't particularly care for an aluminum finish. Because of color variety and comparatively short runs, a considerable portion of the firm's output remained to be finished by hand spraying and dipping.

Although some of the former flow coaters had excellent features, they did not seem to lend themselves to color selection flexibility. They were limited to two colors, and the change-over from one color to another involved too much shut down time.

Conveyorized dipping was often used in similar applications where several colors were required. But here again, the size of equipment and the time consumed in clean-up at color change, made this method a costly approach to color flexibility. The size of a dip tank necessary to take articles the size of a bed spring would require hundreds of gallons of paint in exposed condition. Problems of paint stability due to slow material turnover and costly fire prevention measures added to the overall cost of an automatic dipping system, for coating large parts and sub-assemblies.

The principal feature of this flow coating installation is that eight vertical streams of paint do the job. These streams shoot upward from nozzles mounted in a moving manifold, set at floor level.



Looking into the service pit you see a workman in the foreground checking the viscosity of the paint. In the background a workman is lowering a tank of paint into position prior to changing colors.

Early last year, news of a completely new concept of flow coat

the ZAHN OSCICATOR

TRADEMARK PAT. PENDING

introduces a new concept of flow coating

70% to 90% fewer nozzles.

Less solvent loss.

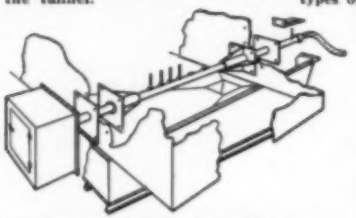
Smaller pumps.

Reduces paint inventory.

Smaller tanks.

A time-controlled and stroke-controlled movement combines oscillation with reciprocation . . . uses only a few standard low-pressure nozzles. This combination of motions flows the paint over all surfaces as the ware moves through the tunnel.

The U. S. Bedding Company of St. Paul, Minnesota, recently installed a Zahn Oscicator for coating a variety of bed springs and frames. This view looking into the flow chamber shows three of the many types of ware being coated successfully with 8 nozzles.



The heart of the Zahn Oscicator system is contained in the small control cabinet at the left. Paint manifold is drilled and tapped on 2" centers so that an exact nozzle pattern may be selected and the balance of the holes plugged.

Improved organic finishing is obtained by the modern features of this new revolutionary flow coating system which uses fewer nozzles, shorter tunnels, smaller pumps and smaller reservoir tanks. The Zahn Oscicator combines an oscillating motion with a reciprocal motion to give a complete flow pattern from 6 or 8 nozzles. This distributes a full flow of paint effectively over the same area that would be supplied by as many as 40 or 50 nozzles in conventional flow coating machines. The amount of paint continuously in circulation is only about 15% to 20% formerly required. This small amount of paint being exposed to aeration accounts for the tremendous saving in solvent loss.

No Expensive Change Over. A Zahn Oscicator conversion unit can replace your present flow coating system within a few hours.

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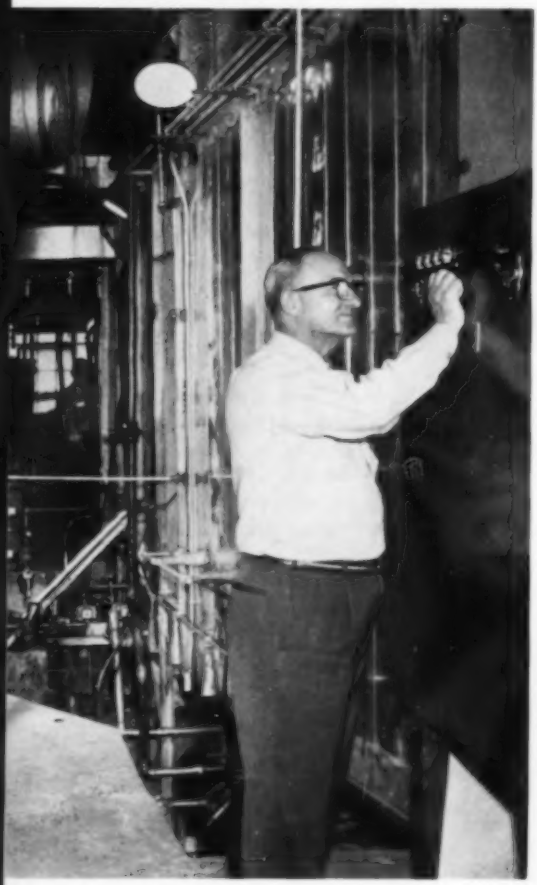
finishing was brought back from Europe by Ed Zahn, an American finishing consultant. The idea of an oscillating reciprocating paint manifold was conceived and as a result, the "Oscicator" flow coater was developed. Here was a machine that could add compactness of design and flexibility to the flow method of finishing, while retaining all of its cost saving merits.

At the control panel on one side of oven. A side of the flow coater and some of the service pit appear in the background.



Fast Color Changes; Fewer Nozzles and Less Solvent Used

It was quite natural for The United States Bedding Co. to be one of the first in this country to see the quick color change possibilities in the new flow coating method, and to install one of these machines to paint virtually all of its production. Automatic wash down headers in the chamber and flow-out tunnel make color changing a 30-minute job.

After an initial start-up with a choice of three colors (aluminum, black and biege) two more colors were quickly added to the lines which would be coated automatically. Now warehousing restrictions and inventory control are the only limiting factors in deciding color variety, rather than the cost of hand spraying custom colors.

An additional feature, hoped for but not necessarily expected of the new equipment, was a substantial reduction in solvent consumption. The solvent used dropped from a drum each day in the former equipment to two or three gallons per hour in the new machine. Considering the fact that the silhouette size of the machine is 7-ft. high by 5-ft. wide; and that the new machine paints an entire day's production in only a few hours, this drop in solvent loss is remarkable. It actually represents a cost savings in solvent consumed of more than 75%.

The "Oscicating" principle provides for a reciprocating side to side movement of the painting

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Look at its performance in shop service: "Aircraft parts freed of scale with boiling soak, instead of sand blasting"..."oil, welding flux, rust removed in job plating"..."soaked steel wrenches give brighter plate"..."removes all rust, scale, carbonized oil from diesel liners prior to plating"..."displays amazing solution life even though worked very hard"..."eliminates pickling and precleaning for barrel-plated screws"..."does to bolts in 3 minutes what took pickling 40 minutes". *And that's just a sample.*

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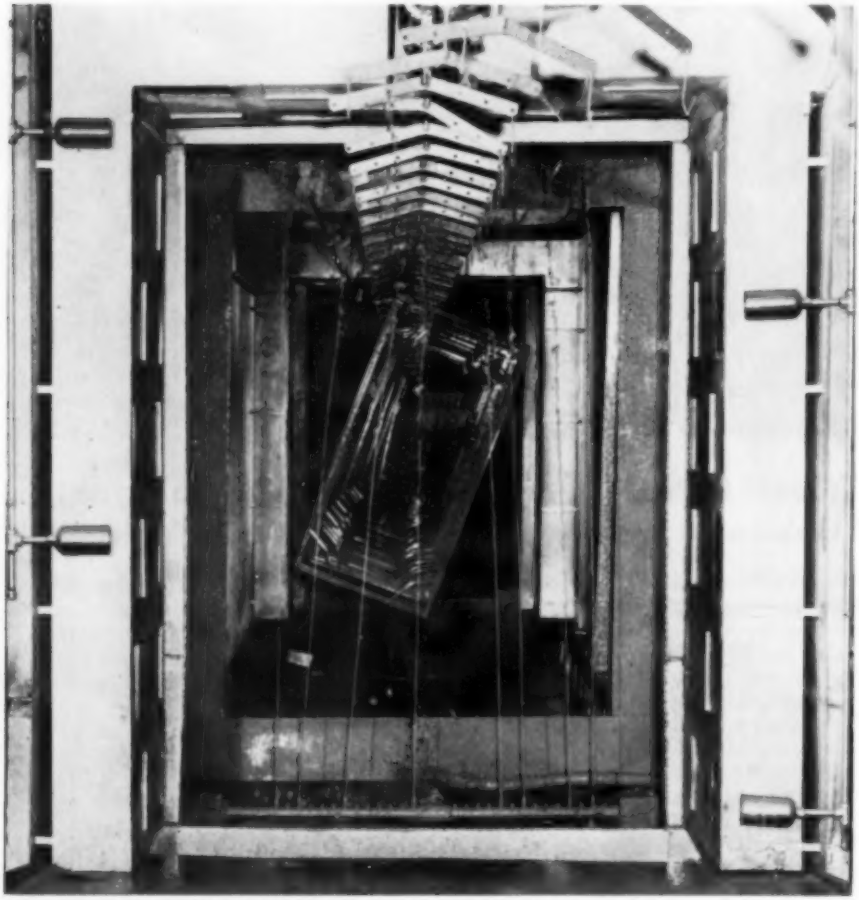
manifold, while it oscillates through an arc three to ten degrees from vertical. This double motion of the manifold produces a full flow of paint from eight nozzles effectively over the same area as might otherwise be supplied by a much larger number of stationary nozzles. Since the amount of paint now in continuous circulation is only about 15% to 20% of the volume formerly used, it follows that the circulating pump, its motor drive and the sump tank size—all can be smaller. The smaller amount of paint exposed to evaporative influences accounts for the big savings in solvent loss.

Heavy line loadings, and a close grouping of ware on the conveyor, make possible a slow line speed



Here is a close-up view looking into entrance of flow coater where you see eight slender streams of paint spurting up vertically from nozzles in the reciprocating manifold below.

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Quality Finishes

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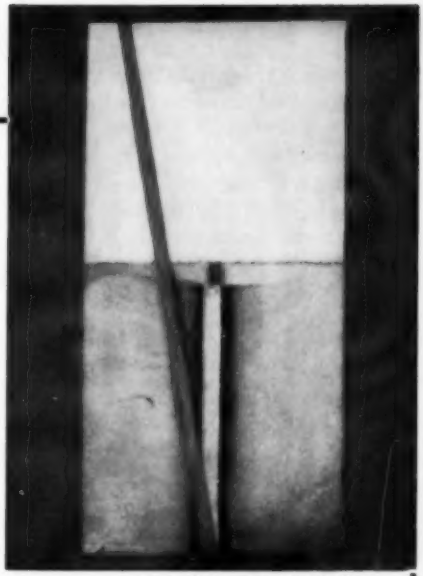

Actual Unretouched Photo

QUALITY THAT SPEAKS FOR ITSELF—The upper half of the above silver plate was finished with Nikolas 2105 Clear Lacquer; the lower half with competitive recommended clear silver lacquer. A rubber band was placed over the two finishes and in two weeks the free sulpher had penetrated the competitive material with the above results.

The same results can be expected when testing No. 2105 Clear Lacquer for Hardness, Mar-resistance and Discoloration from direct sunlight.

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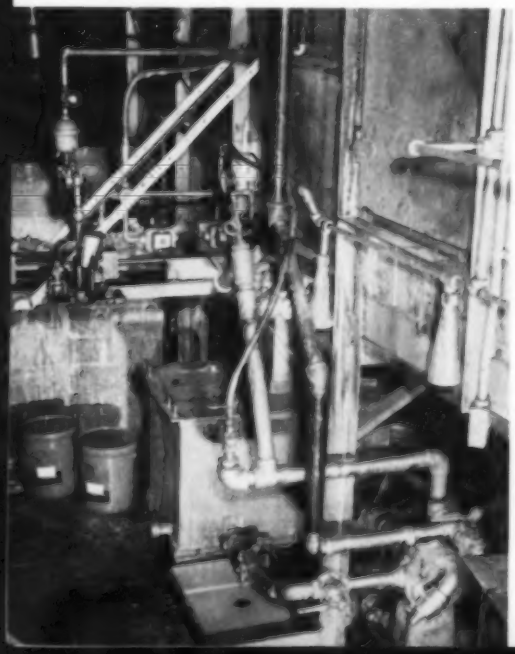
(2⅔-ft. per min.) to paint so much production in such a small space. The entire length of the system, flow chamber, flow-out tunnel and oven is only 89-ft. Even with a short flow out tunnel (17-ft.), detearing is effectively accomplished. This does away with any manual removal of hardened paint drops and retouching of marred places with air dry enamel after baking.

Modified Alkyd Enamel; Baking Time, 17 Minutes 300°

The enamel, designed especially for this application, is a modified alkyd. It is a fairly heavy pigmented material, formulated for high solids at a low initial viscosity. It makes possible a final full-hiding dry film at minimum film thickness, allowing for low viscosity application. This contributes to exceptionally high spreading rates and a consequent economy in paint cost per piece finished. Also it gives the coated products an excellent appearance due to the clean drain-off of material. The amount of paint required for a day's production is less than what was formerly used.

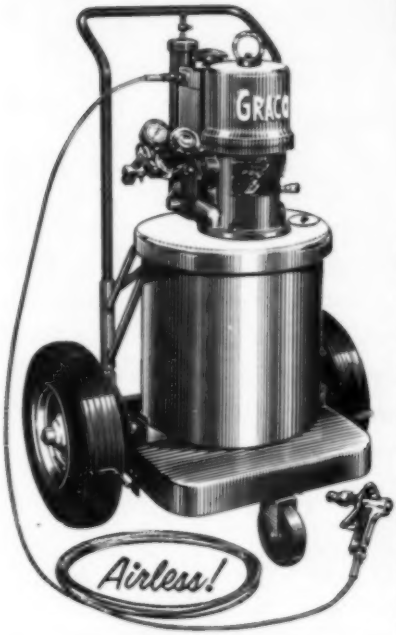
View of service pit showing uncovered reciprocating mechanism, valve controls, pump and sump tank in place. Note the flexible coupling which connects the supply tank to the paint recirculating system. To change colors, the operator changes tanks.



The enamel is preadjusted for anti-foaming and fast bubble break-out. As a result there is no streaking of the final finish. The baking cycle is 17 minutes at 300° F. All of the various colored enamels are formulated for complete compatibility with one another, so if a small amount of material is inadvertently trapped in the system of changeover, no harm is done.

The major portion of the solvent used is a high-flash, highly aromatic naphtha in the medium boiling range, having a Kauri-Butanol value above 80. A similar, but slower evaporating solvent is employed in small quantities as a control when additional flow is required.

The management at U. S. Bedding Co. believes that the new flow coating system and the specially formulated enamel colors have helped to raise the finish appearance quality standards far above their previous levels. At the same time, the company can offer a variety of colors at no extra premium—and the overall finishing costs have been reduced. These are features that have helped this firm's sales department to attract new business.



GRACO

Hydra-Spray cuts finishing costs four ways

Eliminates virtually all overspray. Doing away with atomizing air cuts overspray to the absolute minimum. Requires less masking . . . reduces clean-up time . . . cuts labor and material costs by 30 to 70%.

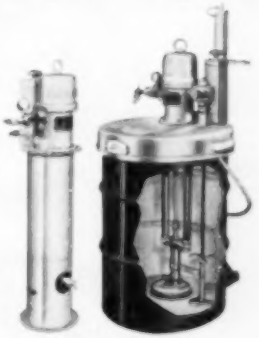
Gives better coverage. Sprays edge surfaces without paint being blown off by atomizing air. Applies heavier film per pass of gun . . . makes it possible to one-coat many two-coat jobs.

Eliminates bounce-back. Uses no air to spray the paint, thus eliminating major cause of bounce-back. Gives complete coverage . . . even when spraying into drums or inside box corners.

Simplifies equipment requirements. Needs no heaters . . . no electrical connections. Eliminates the atomizing air hose. Requires smaller air compressor; minimizes the need for exhaust equipment.

There's a GRACO Hydra-Spray model for any finishing need

In addition to the portable 10-gal. unit shown above, new Graco Hydra-Spray models are also available as sealed standpipe units that provide the advantages of a central-mix supply, and as 55-gal. units that pump direct from full-open 55-gal. shipping drums.



Hydra-Stand (near right) maintains central control over material viscosity at all spray outlets. Connected into an existing circulating system, it keeps material in constant circulation . . . draws paint into the Hydra-Stand only as it's used . . . offers all the other time and money saving Hydra-Spray advantages outlined above.

55-Gallon Hydra-Spray provides high-speed application right at your assembly line or spray area . . . even with large, awkward pieces too big for your spray booth. Has dual outlet manifold for two-gun use . . . air-operated elevator for quick drum changes.

FOR DETAILS, see Graco section in Sweet's Plant Engineering File . . . or call your nearest Graco Supplier. Today!

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For more data, circle 171 on colored card.

Painting Steel Drums

By P. C. Bardin, Associate Editor

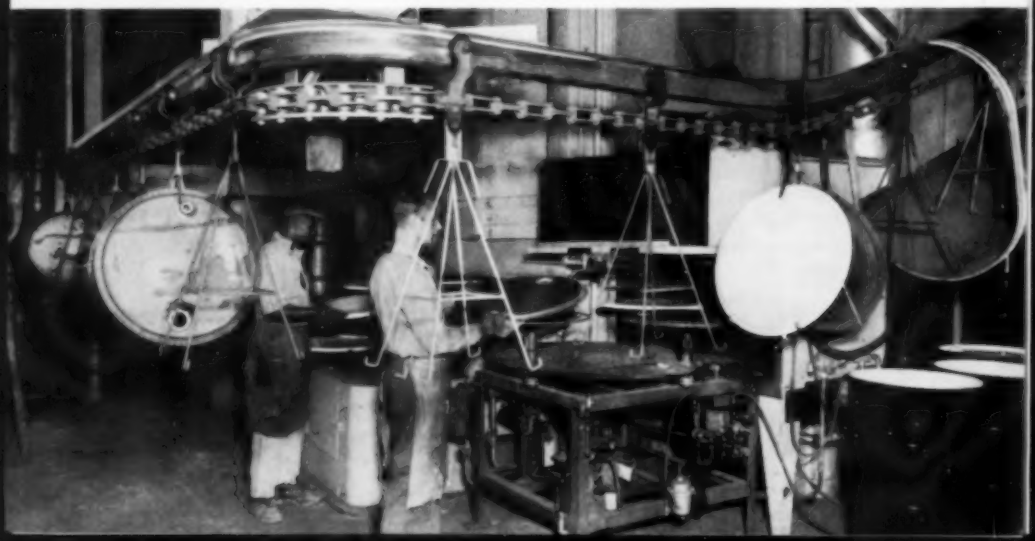
Steel drums are thoroughly cleaned, surface treated, dried off and spray painted inside and outside with specialized coatings designed to protect the contents, and to preserve and identify the outside

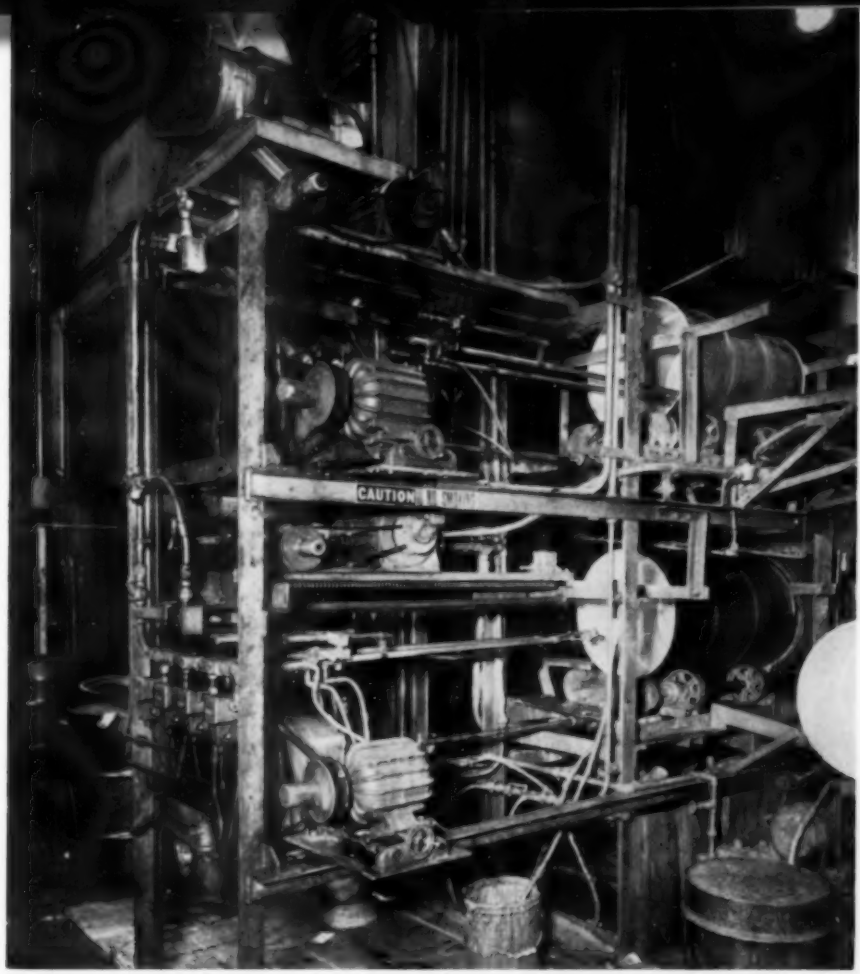
MASS PRODUCTION painting of steel drums requires not only an automatic system, but one that is highly flexible as well. Some new drums require descaling and phosphate coating inside and outside; others only require this treatment on the outside; still others can be processed with a minimum amount of cleaning. Some drums must have special corrosive resistant linings; others receive a coating that simply protects them from rust.

Certain customers specify their own identification colors for steel drums, either in a single overall color or in two or more colors. Finally, there are drums that must be printed or silk-screen processed to show a name, trademark, insignia or lettering.

The equipment and production system must remain flexible at all times to accommodate such a wide variation in specifications. Equip-

Steel drum heads are coated automatically at this machine. After the paint is baked the drum heads are delivered by overhead conveyor to seamers for installation in drums.





The automatic spray machine for coating insides of steel drums. Drums enter at high level; after being coated they enter oven at left, return through oven to the lower spray machine for a second liner coat. Rubber faced wheels revolve drums in spray station.

ment must be completely automatic in order to produce several hundred drums per hour, and at the same time maintain high quality standards.

To give you a complete picture of the operation I will describe the procedure wherein the drums are cleaned, descaled, phosphate coated inside and outside, then receive two liner coats inside, are painted outside and imprinted with the customer's trademark.

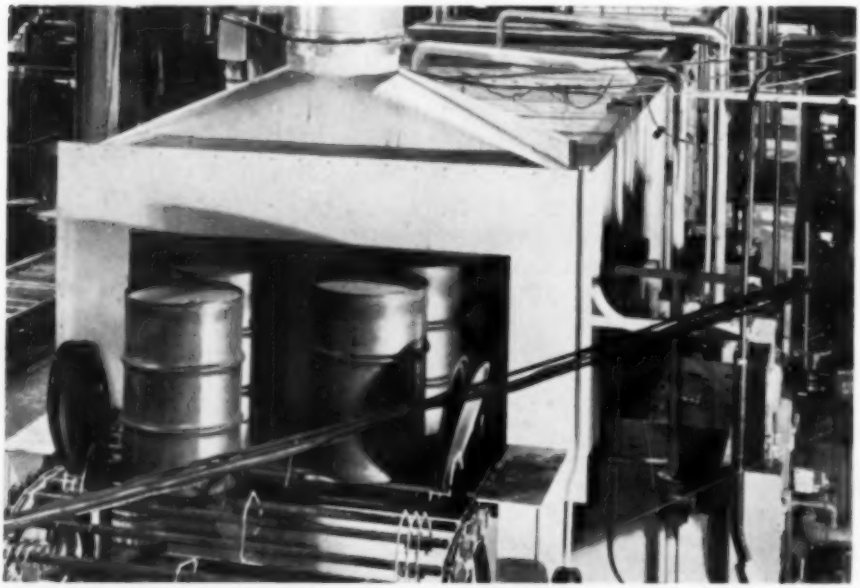
Surface Preparation; Clean; Phosphatize; Dry-off;

The position in which drums are placed on the horizontal conveyor tc move on through the 10-stage power washer determines whether

they will be phosphate coated inside and outside, or only on the outside. If both the exterior and the interior surfaces of the drum are to be treated, the unassembled drums are placed on the conveyor in an upright position. If only the outside surfaces are to be treated, the assembled drums are positioned horizontally on the conveyor. Here is what takes place in the washer:

The steel drums pass through a dry-off oven just beyond the washer; their travel time in the oven is five minutes at 250° F. Then they reach a transfer point where they are transferred to two mainline conveyors. One of these conveyors carries the drums to an automatic spray machine which coats the inside surface. The other conveyor carries drums to the outside drum

Stage	Solution	Temperature ° F.
1	Alkali cleaning	160°—165°
2	Hot water rinse	130°
3	Sulphuric acid solution	180°
4	Sulphuric acid solution	180°
5	Cold water rinse	xxx
6	Cold water rinse	xxx
7	Cold water rinse	xxx
8	Phosphate treatment	140°
9	Cold water rinse	xxx
10	Chromic acid treatment	130°—140°



The machine in which surfaces of drum shells and drum heads are cleaned and treated to make them ready to receive whatever durable coatings are specified by the customer.

One of the many tube coaters in use at the A. H. Wirz Co. in Chester, Pa.

COSDEN SQUEEZES FINISHING PROBLEMS OUT OF WIRZ TUBES

A. H. Wirz Company, a major manufacturer of collapsible tubes for everything from toothpaste to thread lubricant, relies on Cosden finishes to meet complex coating requirements. The finishes must be uniform, color-perfect and adaptable to high-speed coating equipment yet capable of maintaining film integrity under severe flexing, twisting and crimping. In certain applications, the coatings have even been required to exhibit additional properties such as non-toxicity, chemical resistance and special electrical characteristics.

Developing multiple-requirement finishes for varying application methods — at a reasonable cost — is not new to Cosden. Thousands of finish requirements have been met effectively and economically. Maybe yours will be next! Send us your requirements today.

COSDEN
PAINT COMPANY

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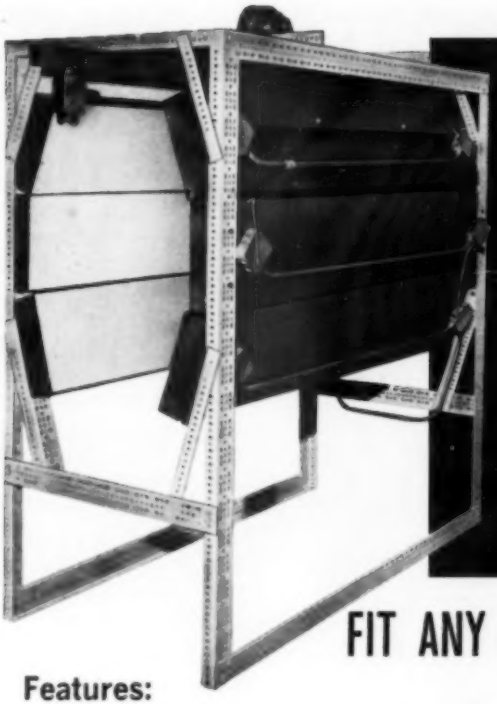
Spray booth for coating outsides of steel drums; a pre-heating oven is at far left. The single-color drums are painted automatically. Two-color drums are manually sprayed in this booth. An elevator conveyor to carry painted drums up to the roof oven is at the exit end of this paint spray booth.

coating lines. The transfer of drums is manually directed.

The machine that coats the inside surfaces of drums is completely automatic. This double deck machine is synchronized with the speed of the in-feed, out-feed and oven conveyors. Drums approach the machine on a high level horizontal conveyor. One at a time they are picked up and mechanically turned to a horizontal position on the upper level of the machine.

In the spray station the drum is revolved as a 360° spray head mounted on a 6-ft. long extension, enters the drum. As the withdrawal stroke starts and progresses the lining material is sprayed on the inside surface. At the completion of the cycle the drum enters an oven adjacent to the spray machine where it continues moving along at the upper level. At the far end of the oven the conveyor descends and returns the drum to the spray station on a lower level. Here a second coat of lining material is sprayed in exactly the same way as the first coat was applied. Speeds are synchronized, so that the first and second coats are sprayed on two different drum interiors at the same time.

After the insides of drums have been coated and the coatings have been baked, the drums move through a series of double seamers



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Free! Your copy of Engineering Data Sheet No. 112 describing RediRay and its applications.

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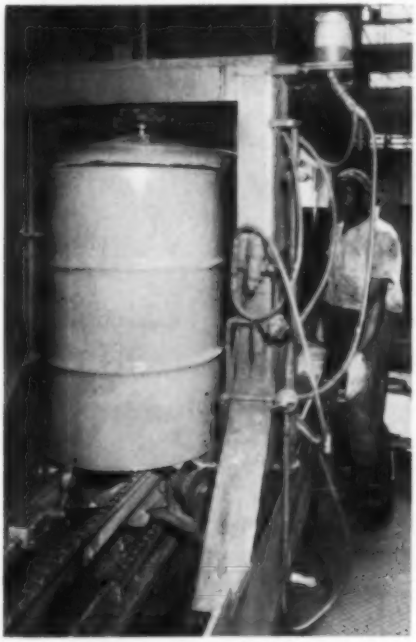
where both heads are installed (or only the bottom head in open head drums) and reinforcing rings are attached. Following these operations the drums pass through a pre-heating oven which raises their temperature to 100° F. This heating prepares them to enter the spray booth where their outside surfaces are coated. Pre-heating offers many control advantages; it is especially advantageous during cold weather.



The automatic chime touch-up machine; drums move from left to right. Air operated chucks hold drum in contact with rubber faced wheel which revolves drums while chimes are being sprayed. The carriage moves with conveyor, indexes and returns for the next drum.

Single color drums are painted automatically by seven fixed spray guns—three for the round sides and two for each flat end of the drums. For drums that require different colors at the ends and middle sections, manual spraying by two operators is usually better. Drums are mechanically revolved in this booth for both automatic and manual spraying operations.

At the exit end of the spray booth a conveyor picks up finished drums and carries them up to an oven on the roof of the building. Drums in a horizontal position travel over 600-ft of conveyor in this convection oven which has a temperature range of 275° to 500° F. For most enamel finishes this firm uses a 30-minute bake at 350° to 450° F. Where special high bake lining material is used the temperature is increased to near 500° F.

Marred Finish on Chimes is Touched Up Automatically

Upon leaving the oven the drums cool as they travel down to the first floor level where they are mechanically up-ended onto a horizontal conveyor. The finish on the chimes is often marred somewhat by contact with the conveyor. To touch up the paint job on the chimes, all drums are put through an automatic chime touch-up machine. This machine includes two air chucks which clamp the vertical drum at top and bottom and revolve it while two fixed spray guns paint the top and bottom chimes and/or the two expanded "rolling hoops." The carriage containing the chucks and spray guns travels at the same speed as the conveyor, then indexes and returns to its starting position.

(Continued on page 50)

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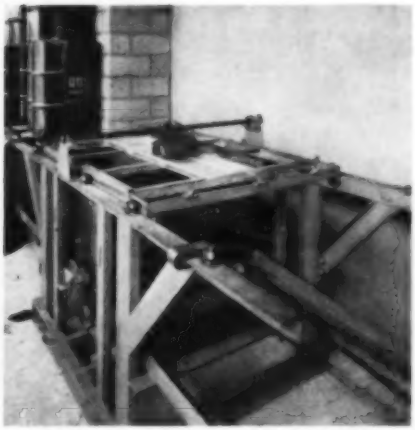
Painted drums proceed to either a two-color printing machine or a silk screen printing machine, depending on customer requirements. The printing machine consists of a wheel the circumference of which is twice the circumference of the drum. Brass plates containing rubber dies are attached to the wheel. As the drum, in horizontal position, rolls under the wheel, the name, trademark, etc., are imprinted on its surface.



The silk screen printing machine. Double squeegees mounted on a rocker arm remain stationary. Movement of the screen frame controls the speed at which the drum revolves during the printing operation.

The silk screen machine is fitted with two squeegees mounted on a rocker arm. This arrangement permits drums to enter either end of the machine for screen processing. Also the double squeegee serves another purpose, as it is used to pull the process material back to the other end of the screen after each printing operation.

The disk shaped heads of drums go through the power washer along with their respective cylindrical "shells." A special conveyor system delivers them to the automatic spray section, baking ovens, double-seamers for installation, or to storage. They are coated with the same material as the drum body in which they will be installed; that is to say, if a drum is to be coated inside with a special lining material, its heads will receive the same number of coats of the material.

The Sanford Process Produces a Hard Coating on Aluminum

Technical Metal Finishing Co., Glendale, Calif., has been licensed by Sanford Process Co., Inc., Los Angeles, for that company's Aluminum Hard Coating Process.

Under terms of the license arrangement, Technical Metal Finishing Co., located at 4435 San Fernando Road, Glendale, will provide Sanford's exclusive, patented hard anodizing process to its many aircraft, electronics and industrial customers. Established by Burks M. Layne in 1951, the company provides a complete range of metal processing services, including plating, anodizing, painting and fluorescent (Zyglo) inspection.

The Sanford Hard Coating Process is a fast method of producing a coating of hard, corrosion-resistant oxide on aluminum surfaces.

Total Service by DeVilbiss

A new 2-color brochure 11x7¾-in. portrays DeVilbiss Total Service which, the company explains, includes the design, manufacture, installation and servicing of all major types of coating and finishing equipment and accessories—available as individual units or "turn key" installations. Illustrations show manual and automatic spray painting, power spray washing and flow coating, dip coating, hot spraying and airless spray painting. A copy can be obtained from The DeVilbiss Co., Toledo 1, Ohio.

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National Sanders are built for **TOUGH** operation on busy production lines. As they are vibrationless, light weight, and easy to operate, they produce the *Smooth* surface so essential to a fine finish. For the woodworking industry National makes a complete line of electric or air driven sanders with straight-line or orbital action. Both single and double-pad air sanders are available. The popular Model 400 is shown below. Write for NEW folder today.

"Ice Follies" Photo
Courtesy Shipstad and Johnson

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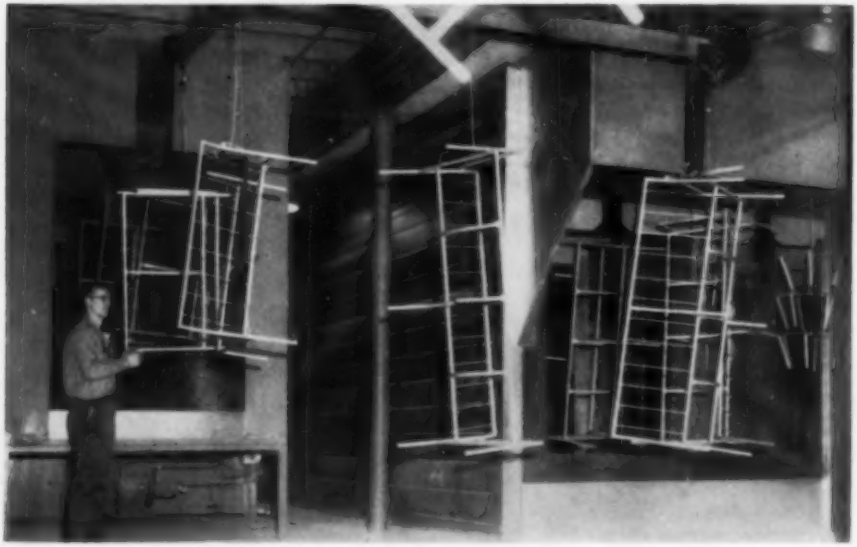
Finishing Operations at VIKO FURNITURE CO.

By Robert Warner, V. P.

VIKO FURNITURE CO., of Eldred, Penna., was incorporated in June 1952, and in 1956 became a subsidiary of T. Baumritter Corp., New York City. Astute perception of the furniture industry and the trend to automation have been the primary factors responsible for a number of "firsts" in the mass production of fine chairs, tables and sectional sofas at this plant. Viko has attracted attention with the use of formable steel in furniture manufacturing, and with several innovations in the working and decorating of plastic parts for furniture.

Our company expects to be turning out about 4000 pieces of home furniture daily from a manufacturing area that has roughly tripled in eight years to about 218,000-sq.ft. Naturally we are vitally concerned about mass production techniques and economies—and this is evidenced in our finishing operations.

Steel frames of section sofas leaving washing tunnel at left and turning on conveyor for a trip through the drying tunnel.



Principal units in the line of furniture manufactured by Viko Furniture Co., Eldred, Penna.

Vinyl Plastic Film is Processed and Printed

Viko extrudes its own vinyl plastic film. The company engineered and fabricated a complex machine that prints and embosses this film in an automatic, continuous run.

On a step by step basis we first employ the use of pile-up boxes so that film can be unwound from the rolls and stored while new rolls of material are linked to the previous roll by heat welding. This allows a continuous movement through the first gravure printing stage to a second gravure printing stage, where the use of vinyl inks are employed. Then there is a final back coating, with the air stream flash-offs for drying between stages. As the material leaves this third step it is taken to an asbestos flat belt conveyor and moved through an infrared oven which cures the vinyl inks and coatings. The film then moves to a festooning conveyor where it is allowed to completely relax before it is rewound.

In the same piece of equipment the material is then unwound and again goes on an asbestos conveyor through an infrared oven where it is brought to a temperature of 225° F. before entering the embossing rolls. Embossing is accomplished with a counter-impression rubber roll and an engraved embossing roll. The film is then chilled on refrigerated rolls, allowed to relax and is then rewound as the finished product. [*Continued on page 54*]

Includes cleaning steel parts, a surface treatment, dry-off, prime and finish coats put on by electrostatic spraying and finally oven baking the finish.

In another connection the company devised a process and built a machine that makes plastic T-molding for furniture strips. The molding is decorated or grained and cut to size in a unique manner perfected at considerable expense.

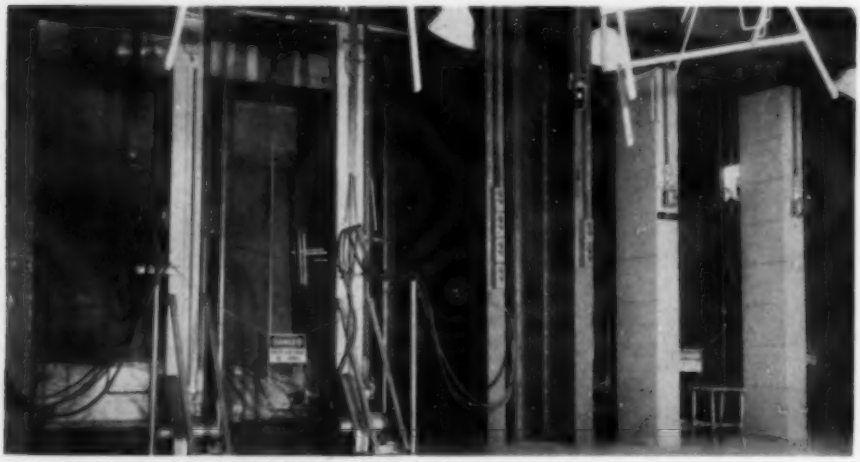
New Setup for Finishing Steel Furniture

Viko is just now "breaking in" a new finishing facility that is outstanding in the furniture industry. Years ago we put together our own version of a conveyorized, electrostatic painting system which is still in use. For our new setup, which enables us to paint a large piece of steel furniture, for instance, we engaged a well known finishing system company to help us engineer and install the facilities.

This installation includes cleaning and drying steel parts, electrostatic application of base coat, flash-off drying, electrostatic application of the top coating, and a final baking. All of these operations take place on an 800-ft. conveyor in a "pressurized" room which is about 52x140-ft. The steel pieces processed here are hung onto the conveyor at one side of the room. First they enter a wash tunnel where they get the customary acid cleaning and water rinse, using the rotary arm, impingement method. Both stages are of about 1¾-minutes duration with temperatures up to 150° F. The conveyor then takes a short turn and enters a gas-fired convection oven where the pieces receive a dry-off for about three minutes at 350° F.

The oven we have is a little different from those in operation in many plants. Right beside where the washed pieces are dried you find the final baking of painted furniture, all in one enclosure or oven. The paint baking is also done at 350° F., for ten minutes, with

The priming or base coating booths are large enough to accommodate sofa frames.



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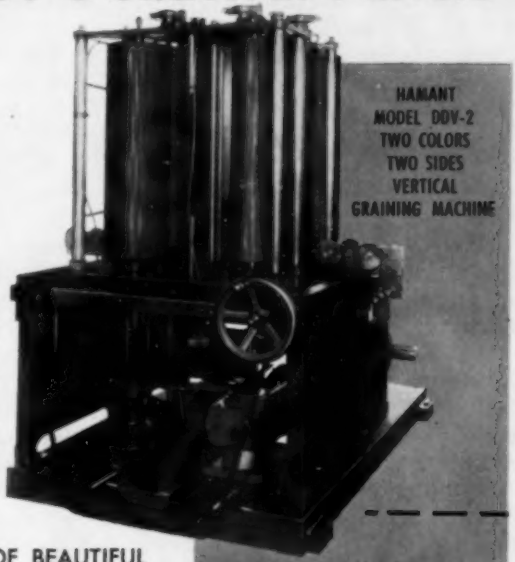

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the conveyor doubling back the way it came into the oven.

Getting back to pieces that are cleaned and which are now dry, they travel by conveyor for about 60-ft. and enter the electrostatic base-coat booths. There are two booths, at this stage, side by side. The base coat is applied in four stages, in a progressive operation so that a full and even wet coat of base material is deposited on the parts.

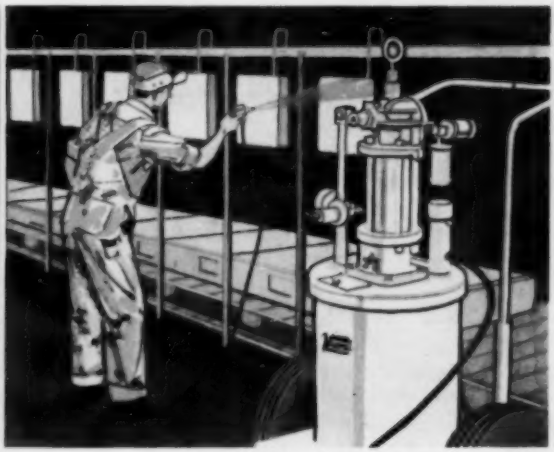
The base coat is a modified epoxy base, opalescent metallic paint. Following its application, the conveyor moves the pieces through a flash-off period of about ten minutes along one side of this painting room, and then into the final electrostatic coating application. This second coating is of a clear modified epoxy melamine paint. There is a 3-minute flash-off period before the pieces move into the bake oven previously mentioned. The painted and baked steel pieces are allowed about 45 minutes to cool and become adjusted to room temperature before they are ready for final assembly into furniture.

The finishing of wooden arms and backs for chairs and sectional sofas might be noted. Here we use both overhead and belt conveyors, carefully integrated into a "department" so we can concentrate this type of work in one safety conscious area. There are irregular intervals of time between the steps in finishing these wooden pieces, hence the different conveyors are used to suit the operations.

The first step in this operation is the application of a fast-drying vinyl-based sealer coat by hand spraying. An air drying of the sealer coat occurs while the parts move along on a flat belt conveyor. At the end of this conveyor an op-

Exit side of the base coating booths, with more of the new equipment at the right.

New Spray Principle Brings New Paint Savings... New Labor Savings!



ALEMITE HYDRASTAT SYSTEM GIVES 80% FASTER PAINTING 40% GREATER COVERAGE PER GALLON!

No waste . . . greater materials savings . . . less time per job because New Alemite Hydrastat Paint System atomizes paint by hydraulic pressure . . . *puts paint only where you want it!* Uses no heat. Doesn't atomize air. Overspray and bounceback are virtually eliminated.

Often eliminates need for second coat! With no overspray or bounceback you cover more area, use less paint. Even corners and hard-to-reach places get complete coverage. Paint flow is continuous, sprayed with an even flow at constant pressure. Continuous agitation prevents pigment from settling, eliminates color change or spotting.

Requires less working area! Hydrastatic spraying action prevents excessive clouding. Exhaust and air equipment needs are reduced. There's less fire hazard . . . less cleanup.

Versatile! 24-to-1 operating ratio pump and paint container (5 or 10 gallon original containers) move easily from line to line on wheels . . . may be used for roving "touch-up." For fixed-line set-up, pump from original 54 gallon drums.

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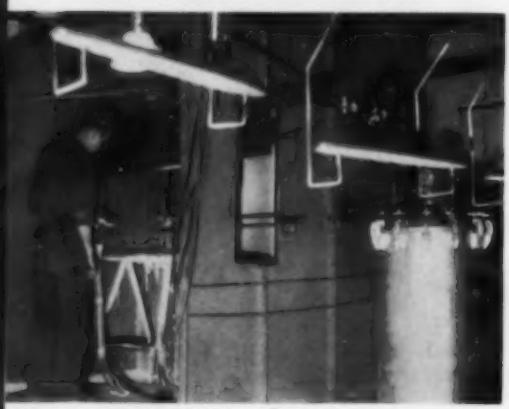
erator hangs the parts to an overhead conveyor which takes them through a dip tank for filling. A 25-minute flash-off is allowed before the parts arrive at a take-off station where the filled surfaces are hand wiped with tobacco netting.

Following wiping, the filled pieces are placed on another flat belt conveyor which takes them through a 45-minute air drying cycle. Then they are placed on an overhead conveyor which carries them through a spray booth where a catalyzed synthetic base coat is automatically sprayed on. Drying takes place as the parts move through an overhead drying tunnel. In the second spray booth a final top coat of lacquer is applied. The coated parts then travel through another drying tunnel after which they are taken off the conveyor and placed in a warm air oven where they cure for two hours before they are buffed and packaged, ready for final assembly.

Here an inspector is standing in front of spray booth where chair and sofa arms are being coated by automatic spray guns.



Salesmen's Expenses

THE EXPENSE account is not to be abused. It is part of the sales cost. Any time the sales cost exceeds very definite bounds, something drastic is bound to happen. One good yardstick to apply is this: "Am I doing this to promote company business, or am I doing it just to be a big shot?" Be honest in your answer. Always remember that a given amount of business can tolerate just so much sales cost, and not one penny more. The job is to sell goods at a profit, and always remember that the total selling cost, your salary, commission or pay, plus the expense account must stay within bounds.—*C. R. Brown.*

DeVilbiss St. Louis Factory Branch Moves to New Building

The St. Louis factory branch of The DeVilbiss Co. has moved to a new building in the Page Industrial Center at 1501 Fairview, St. Louis 32, Mo.

The new building houses the area sales office, engineering and service center, and provides warehouse space for a full selection of DeVilbiss products. The building is 100x148-ft. It is modern, fireproof construction—concrete block and brick. An asphalt-paved parking lot will accommodate 40 cars. The building grounds are landscaped.

The St. Louis office is the latest of eight DeVilbiss factory branches to move to larger, more modern headquarters. The site was selected for customer convenience. It is off Page Boulevard, a mile from Lindberg Boulevard (By-Pass 66) and only a short distance from U. S. 40, Mark Twain Expressway and the Airport.

Pressure Spray Washing of Paint Masks

A brochure which describes three models of machines for high pressure spray washing of paint masks is being offered by Conforming Matrix Corp., 331 Toledo Factories Building, Toledo 2, Ohio.

Time and labor saving, protection of fine wire bridging on masks and low solvent consumption are features.

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This new laboratory has been added for the special purpose of developing colors for our customers' new designs. The work here involves the finishing of panels for submission to both customers and prospective clients. Occasionally, pieces of furniture are also finished here for customers, styled especially in new colors. You, too, will be pleased with the Snyder Brothers facilities—its technical and sales service, color styling, and materials formulated to your particular needs.

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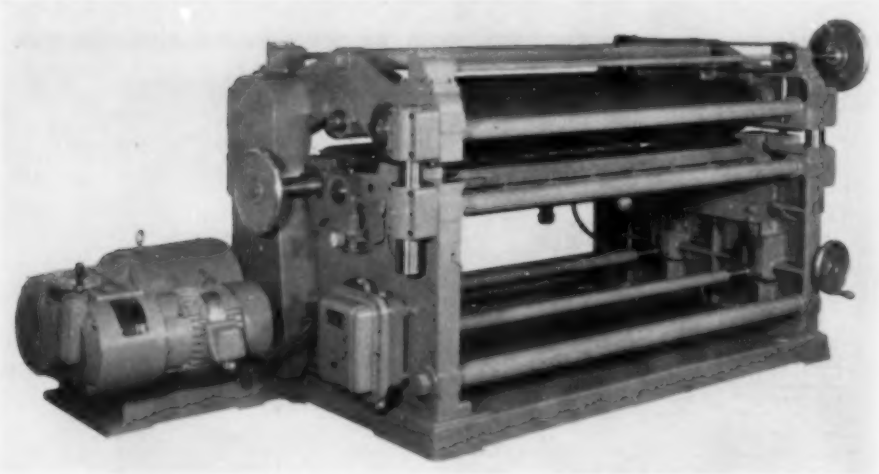


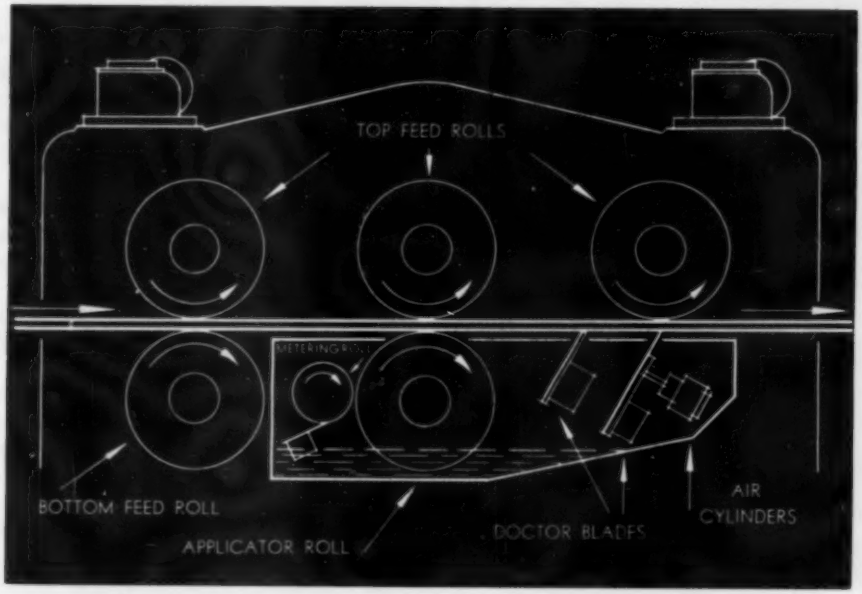
Filling and Sealing Flat Wood Surfaces

By P. C. Bardin, Associate Editor

THE REPRODUCTION of attractive hardwood grain on plain solid and plywood surfaces is being extended to include woods used in the better grades of furniture. Grain reproductions of stripe and crotch mahogany, plain and burl walnut, cherry and quartered oak grain designs are transferred to such woods as gum, poplar, tupelo, luan, etc. The two, three and four-color process systems of reproduction, plus improved furniture design, are showing excellent results in better furniture. The multiple color systems produce remarkably realistic grain designs.

The use of solid wood divider or break strips, with the grain design running at a 90° angle, has eliminated that continuity of grain design which was the telltale mark of early socalled printed furniture.

Upgrading the end use of grained wood parts for furniture has resulted in demands for a high quality finish which, in turn, requires a uniformly smooth surface before finishing begins. The flat surfaces of both solid wood and plywood con-



The Bottom Knife Coater has three top feed rolls, an infeed roll below, a smooth metering roll with a sharp doctor blade, a milled applicator roll, a heavy blunt doctor blade and a thin blunt doctor blade, the latter being adjustably pressed into position all along its length by a series of compressed air cylinders. Illustrations courtesy of Schmutz Mfg. Co.

tain numerous tiny hills and hollows which must be made level and smooth. To obtain high-class grain reproduction these surfaces must be filled and sealed before the base color coat is applied.

Bottom Knife Coater Fills And Seals Wood Surface

Fortunately an effective and practical method of filling, leveling, sealing and smoothing flat wood surfaces mechanically, at reasonably fast rates of speed, has been developed. The operation is performed by feeding a continuous stream of stock through a "bottom knife coater." This machine fills the pores of the wood; it fills all of the tiny cracks (if any) and those tiny hollows or depressions that can hardly be seen without a magnifying glass. And it seals the surfaces so they are in ideal condition to receive the base color coat.

Referring to the drawing, the machine has three top feed rollers (each rubber covered steel) one bottom pressure roller, a small steel metering roller, and a milled-face steel applicator roller. Rubbing against the underside of the small metering roller is a sharp edged doctor blade which continuously cleans the surface of this roller. There are two doctor blades positioned to rub against the underside of the stock under the last feed roll, at the outfeed end of the machine. The applicator roller, metering roller and the three doctor

blades all operate within an enclosed pan that holds the filler-sealer material.

Before they are put through the knife coater, plywood tops, end panels and solid wood drawer fronts should be drum sanded in the usual way. Since the face of the applicator roll is milled, it is capable of picking up and applying an extremely heavy coat of filler-sealer if this is required. However, the thickness of this coat can be precisely controlled by adjusting the space or pressure between the metering roll and applicator roll.

Roller Coating is Followed by Pressure of Doctor Blades

As the stock proceeds through the machine a heavy, blunt-edge doctor blade bears against the wet coated surface to press the filler-sealer material into the surface of the wood—or, to say it more accurately, into the pores, minute cracks, hollows and any slight depressions. In fact, what this blunt-edged doctor blade does might be compared to the hand padding-in of filler by workmen in a wood finishing operation.

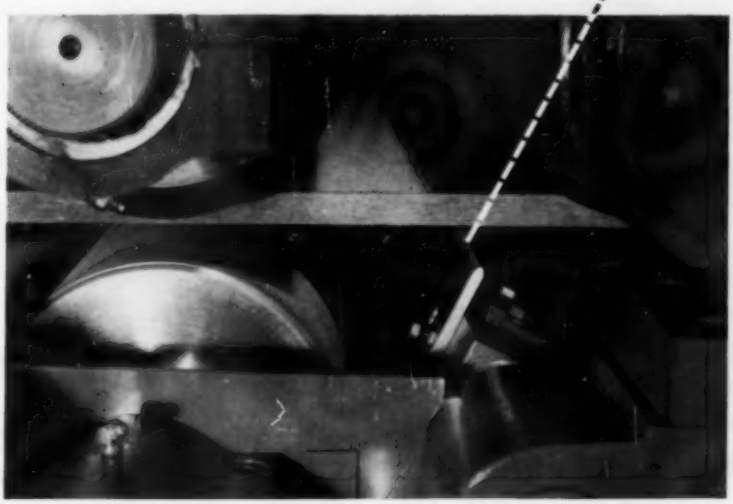
The second doctor blade that presses against the surface of freshly coated stock is thinner and more flexible, and its edge is blunt. This doctor blade is equipped with a series of air cylinders extending across the entire width of the machine so that the pressure of this blade against the wood can be adjusted to any desired degree. The air cylinders provide a cushioning effect as the blade "knifes" off the excess filler-sealer from the surface. The object is to clean the surface, leaving only a very thin coating of sealer. The thin, flexible doctor blade under the proper air pressure does just this in a precise manner. All of the excess filler-sealer material removed from the surface of the wood flows back into the supply pan for re-use. Obviously this makes for a very economical operation. The object is to clean and level the surface, leaving only a very thin coating of sealer.

The bottom knife coater is driven by a 3-hp. motor. A variable speed drive gives rates of feed of from 30-ft. up to 100-ft. per minute. An air pressure of up to 30-lbs. may be used on the air operated doctor blade. The amount of pressure to use against the flexible doctor blade always depends upon the kind of wood being treated, and the condition of the surfaces to be filled and sealed.

Filler-Sealer Can be Fast or Slow Drying

Extreme care must be observed in the choice of the highly pigmented filler-sealer used. First, it must be compatible with subsequent coats to be applied, particularly the base color coat. Other influencing factors include the volume of production, how much or how little automation is desired, and whether the filled and sealed stock is to be air dried or force dried. For instance, there is a highly pigmented vinyl-base filler-sealer which, when applied by the bottom knife coater, will air dry in two minutes. Or the stock can be turned over as it leaves the coater and placed on a flat-bed conveyor which carries it through an infra-

Reliance filler-sealer applied by knife-coating



Reliance "Filler-Sealer" makes an excellent foundation, fills wood pores, small cracks, veneer glue joints, and slight depressions that normally appear in veneers and solid woods.

Reliance "Filler-Sealer" is formulated for high speed production with extremely short drying cycles. The filling and sealing properties of this product promote smooth surfaces, allowing economy amounts of succeeding coats.

Reliance has a complete package of chemical coatings, operational methods, and equipment guidance for prefinishers of furniture and architectural parts.

For complete information, write: Reliance Varnish Company, Inc., 4730 Crittenden Drive, Louisville 9, Ky.

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Engineered Chemical Coatings

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red electric oven to force dry the filler-sealer in a matter of seconds.

The stock can then be cooled and banked for future processing, or it can continue through the line for light belt sanding (really polishing) and application of the base color coat. It may continue on for grain transferring, clear protective coating and final force drying.

This machine coats the under side of flat stock with a new filler-sealer, then presses or "pads" the coating into pores, small cracks and depressions and finally rubs off the surplus, leaving a really level, smoothly sealed wood surface which, when dry, is ready for colorful grain reproduction.

Some other formulations of filler-sealer material require longer air drying periods—some as much as 8 to 12 hours, with comparably long periods for force drying.

Naturally, the coating of filler-sealer must be thoroughly dry and adjusted to room air before the surface is lightly belt sanded to give it a smooth polished effect.

Machine Is Also Suitable For Filling Chipboard

The bottom knife coater is adapted for use in filling the face and/or back of particle or chipboard. The machine is designed to satisfactorily handle the special low-solvent, quick-drying filler that is required for chipboard.

Knife coating should not be confused with reverse roller coating. Each machine and method has its special purpose in the production picture. Reverse roller coating is best suited to filling, leveling and preparing the surface of composition board, commonly referred to as hardboard, which is a hard unyielding material. Knife coating is best suited for filling and sealing plywood and solid wood surfaces which are fibrous, porous and more or less resilient.

Engineered Finishing Systems

A new 8-page (8½x11-in.) illustrated bulletin, printed in two colors, shows power spray washing and phosphatizing machines, monorail vapor degreasers, dry-off ovens, flow coating machines and four layouts for complete conveyorized surface treating and product painting systems. A copy can be obtained free from Ramco Equipment Corp., 821 Edgewater Rd., New York 59, N. Y.

Chemicals for Metal Finishing

Conversion Chemical Corp., Rockville, Conn., has issued a new, easy reference chart for metal finishers. This chart lists approximately 50 Kenvert items, including chromate treatments, bright dips, brighteners, plating additives, pickling and cleaning specialties, and protectives —all designed for specific applications. The chart and name of your nearest distributor will be forwarded on request.

Stanley Chemical Appoints W. G. West Sales Manager

William G. West has been appointed sales manager of The Stanley Chemical Co. subsidiary of The Stanley Works, East Berlin, Conn.

Mr. West is a member of the National Paint, Varnish & Lacquer Association and the New York Paint, Varnish & Lacquer Association.

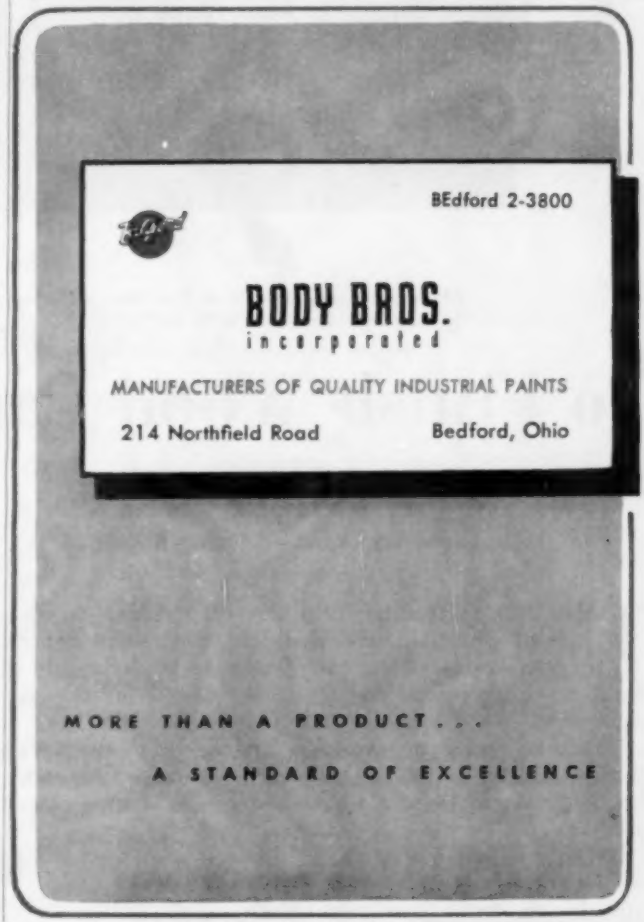
Baking Trouble? Check Your Oven Carefully

EVENLY distributed and uniform heat are necessary in a baking oven. Does your oven have it? If the work comes out with some parts baked perfectly while others are undercured, then you know there is an uneven distribution of heat. There are cooler spots somewhere. Very likely the oven is properly designed, so the cause of the trouble narrows down to a few possibilities. The fans may not be working properly; the baffles or vents may be displaced or even fouled up.

Check all of the physical details in the oven; correct them and your troubles should be over. Check the source of heat (the burners) and see that everything is working satisfactorily.

You will want to know what differences in temperature prevail in the oven and where. From the position of the work being baked you can get a rough idea of where under heated areas are located. Place oven thermometers at various places in the oven and take the readings.

Sometimes you find a smart finishing material salesman who has a couple of these thermometers in his car for testing purposes. This will remove the guess work to a large extent. It is an easy way to test any baking oven to determine the actual temperature in different areas of that oven at any particular time. When I was on the road I carried an oven thermometer in my car at all times. —*C. R. Brown.*



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Pedestal tabourette table in Honduras mahogany.

To Finish Wood Carvings

By *Frederick E. Kotzian, V. P.*
John Scalia Inc.—Schmieg & Kotzian, Inc.*

THE FINISHING of furniture, part of which includes certain carved areas, does not lend itself to high speed mechanized production. It definitely calls for a series of hand operations. Of course, modern materials and tools can be employed to good advantage, but basically, carved wood demands a skilled craftsman's touch.

There are no set rules of procedure in finishing carvings. Each finisher develops his own methods which will depend, to some extent, upon the specie of wood, the prominence of the carving and kind of finish that may be required. However, all methods of procedure must be based on some very definite do's and don'ts.

Before going into the details of one method of finishing carved sur-

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MAC'S UNIFLO STAINS are finely dispersed pigment stains which can be applied by spray or brush to close grained woods such as Poplar, Gum, Maple and Birch.

ADVANTAGES

1. They possess excellent flow out properties and do not require wiping.
2. Give appearance of a wiping stain and impart very good color uniformity to the wood.
3. Air dry in one hour.
4. Can spray chairs and other pieces with hard to reach corners without showing white lines.

Order a 5-gal. can at drum price and convince yourself.

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faces, let us consider the work to be accomplished. First of all, hand carvings must have sharp clean-cut lines and edges, therefore the use of sandpaper—even hand sanding—is out of the question. Sanding would blunt and detract from the original clean cuts of the carver's fine handiwork.

More End Grain is Exposed; Lighter Stain Should be Used

In a wood carving, a considerable percentage of end wood grain is presented. For this reason the selection of the stain color is important—in order to avoid showing a darker color in the carved areas than is specified or desired on plain flat and curved surfaces. It is well to remember that in order to produce a uniform color over an entire piece, the carving actually sets the standard. A lighter shade of stain should be used on carvings than on uncarved areas. The carved areas can always be darkened with alcohol stain, but they cannot be made lighter in color after the stain has been absorbed in the end grain wood.

Thin Coat of Finish Reveals Beauty and Character of Wood

The finish on carvings should be on the lean side—skimpy in other words. Carvings that are loaded with varnish or lacquer lose their true identity. The natural lights and shadows are destroyed and the piece takes on a cheap and shoddy appearance that certainly is not in keeping with the character of a fine hardwood and the workmanship of a skilled carver. Along this same line, it is highly important when finishing carvings to keep them clean, especially after filler is applied.

Carvings have many narrow cuts, pockets, coves, veins and wells in which not only filler but sealer and top coats are likely to accumulate too heavily unless extreme care is used. If excess finishing materials are allowed to accumulate and dry in these intricate areas it is almost impossible to remove them without seriously damaging the carving.

Finally, extreme care should be exercised in selecting the top coat material for finishing any carved wood surface. Fine wood carvings should never be coated with a high gloss material. Depending on the type of finish required for the entire piece, the carving might be finished with a semi-gloss or flat lacquer. The background or lower levels of the carving should present a flat appearance, therefore I advocate spraying a flat lacquer on the carving. The high rounds and high edges should be semi-gloss to give them prominence without imparting a severe gloss. This effect can be accomplished by "ragging" the gloss lacquer on these areas only. Carvings should have a limited amount of sheen; they should not be dull and lifeless, but they should not reflect brilliant light.

Detailed Procedure Used in Finishing A Carved Table

To explain one method of finishing carvings, I have selected a small pedestal tabourette table in Honduras mahogany (see illustration). All uncarved surfaces have been sanded with No. 4/0 sandpaper before the table reaches the

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The all welded extra rugged frame is built for trouble-free, heavy-duty service. Units are fully adjustable to roll a wide range of container sizes—from a 5-gallon pail to a 55-gallon drum. They are designed to handle loads up to 1000 lbs. per drum, with standard models available in 1, 2, 3 or 4 drum capacities, constant or variable speed drives. Totally enclosed or explosion-proof motors also available. Write today for details on the complete line of "U. S." Drum Mixing Equipment.

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finishing room. First, a slightly lighter shade of alcohol stain is brushed on the pedestal and feet of the table. Then a slightly darker stain is brushed on the top. The stain coat is allowed to air dry for eight hours before any sanding is done. Then only the top of the table is sanded with No. 6/0 sandpaper. The carved areas are not sanded.

An oil-base filler is brushed over the entire table. The color of this filler must be carefully selected so as to avoid darkening the carving too much. The usual padding-in methods are employed on the top. A short bristle brush is used on the carvings, to work filler into the pores of the wood.

Cleaning off the excess filler is important. The top offers no problem but much time and care must be spent to remove all surface filler from narrow cuts, pockets, flues, veins and wells in the carving. Thin cotton toweling and orange-wood picks are useful for this work. This cleaning of the filled surfaces in a carving is a time consuming job but it is necessary if the true character of the carving is to be retained. The filler that remains in the pores of the wood is allowed to dry overnight.

Lacquer Sealer; Glaze; Wipe-off; Finish Coats; Drying

A flat lacquer sealer—one on the thin side and not over 3% solids—is sprayed over the entire table. The sealer coat is allowed to air dry for four hours before the top is sanded with No. 260 sandpaper. Next, a glaze coat is brushed on the top, on the fluted portion of the pedestal, and on the plain areas of the feet, including the claws. This brushed-on glaze is wiped with rags, giving special emphasis to the flutes and claws.

A coat of 22% to 25% solids gloss lacquer is sprayed on the top and fluted portion of the pedestal. This should be a light coat, and none of it should touch the carved areas. A fiberboard shield may be used by the spray operator to mask out these areas while spraying. After a 4-hour air drying, an alcohol stain is used to uniform the entire table including the carved areas.

The stain coat is allowed to dry four hours before a second coat of 24% solids gloss lacquer is sprayed on the top and fluted portion of the pedestal only. Four hours of air drying is allowed before these areas are sanded with No. 260 sandpaper. Care must be used in sanding the flutes. Next, a third coat of gloss lacquer is applied to the same areas, and the same lacquer is "ragged" on the high level areas of the carving, being careful to avoid coating the background, narrow cuts, coves, veins and wells.

Rubbing; Careful Cleaning; Color Waxing; Polishing

After an overnight drying the top, flutes and high levels of the carving are rubbed with 3F pumice lubricated with crude oil to which 50% benzine is added. Excessive rubbing of the high levels of the carving should be avoided; just give them a light touch. A thorough cleaning of the entire table is a must. No pumice residue should remain in the carving. [*To p. 72*]

CABINET MANUFACTURER SAVES TIME; IMPROVES FINISH WITH SPEE-FLO HOT SPRAY

Noblecraft Wood Products Company of Beaverton, Oregon, has earned an enviable reputation for building fine fixtures and quality residential cabinets. Maintaining quality control, however, was exceedingly expensive until Spee-Flo Hot Spray equipment was installed. Now, a finish superior in both appearance and durability is attained with savings in spraying, drying and over-all production time.

Invariably Spee-Flo users report improved coverage, elimination of runs and sags, faster drying, and a longer-lasting, better-quality finish . . . with time and materials savings too! Let us arrange an on-the-job demonstration and you be the judge. Write for informative booklet "Why Hot Spray?"

Find out about SPEE-FLO HydraAirless 20/ H-Gun systems, amazing new development in paint spray equipment!

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181

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The entire table, including the carving, is waxed and polished. We have found it expedient to add color to the liquid wax that matches the color of the table. It is difficult to remove all of the wax from some of the close places without destroying the sheen on the high levels. Addition of color to the wax prevents a white residue in the carving when the wax dries. Liquid wax is preferable to paste wax for use on carvings because the paste wax has a tendency to lodge and cling fast in the narrow cuts, pockets, veins and wells.

Finishing Carved Back of a Fine Hardwood Chair

In the chair back shown with this article we have a combination of relief and open carving. The same procedure, with a few additions, is followed in finishing an open carving such as the chair back. The edges of the open carving are definitely end grain wood. On this job even greater care must be exercised in selecting the color of stain and filler, because of the greater percentage of end grain wood exposed.

Special care must be used in cleaning the edges of the open carving after filling and waxing. In other words, the open carving must receive exactly the same treatment that is given the narrow cuts, pockets, veins and wells in the relief carving. The edges of the open carving should be finished in flat lacquer and waxed. These edges should remain obscure so as to avoid detracting from the relief carving and the face edges of the open carving.

Carved work should be finished in a way to emphasize the highlights and natural beauty of the skillfully carved wood; avoid "loading" it with too much finishing material.

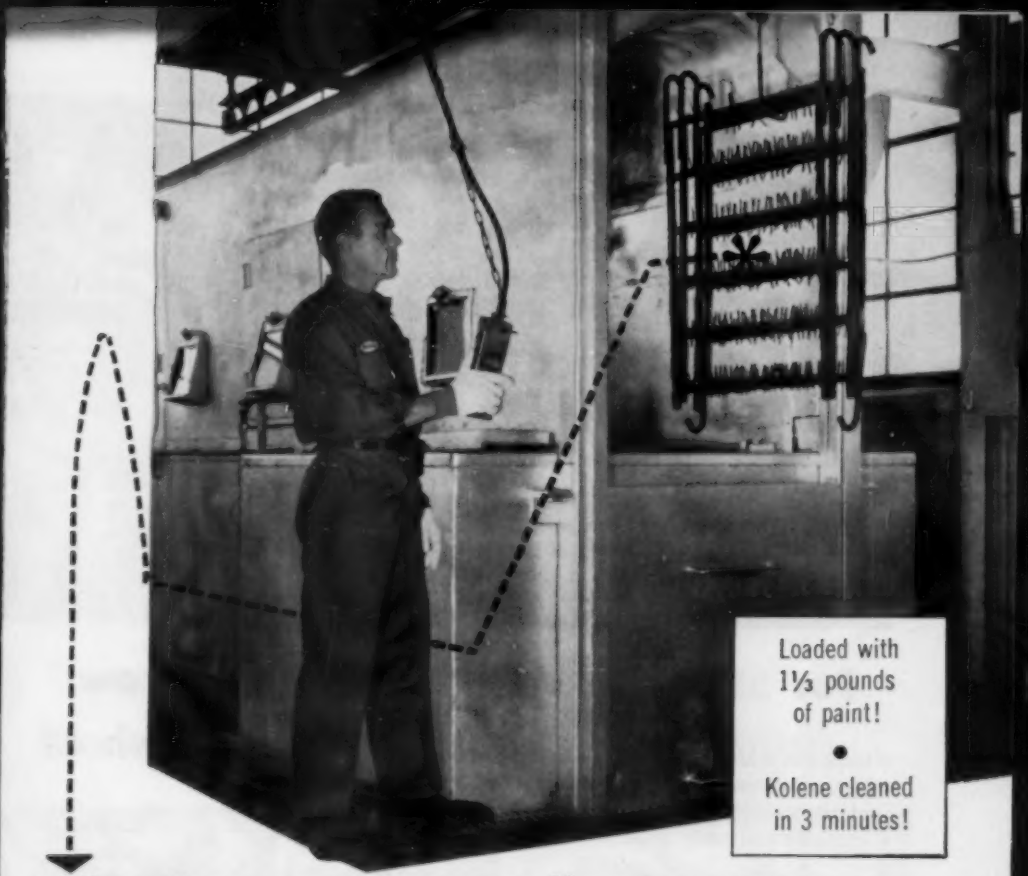
New Vinyl-type Coatings

Magna-Bond, Inc., 1718 S. Sixth St., Camden 4, N. J. has developed a series of coatings formulated to combine the highly resistant properties of the vinyl copolymer with the tough and extreme edhering characteristics of blended resins. The chemical inertness of the chain is due to the absence of unsaturated bonds and reactive groups, along with the presence of a high percentage of chemical resistant polyvinyl chloride.

The coatings contain 43% to 45% solids, have good abrasion and impact resistance; they are non-toxic and electrically non-conductive. They are also resistant to alcohol, oils, grease, fatty acids and inorganic acids.

A brochure describing these coatings and their use is available from the manufacturer.

For more data, circle 186 on colored card. →



*Hooks, racks, or "rejects" stripped clean of paint in 5 seconds to 4 minutes!

Now you can abandon costly hit-or-miss methods of paint stripping. Install a Kolene unit to place the paint stripping operation in its proper relationship to other modern operations in your plant. Engineered by us for batch cleaning (shown above), or for continuous, fully automatic conveyor systems. Clean, safe and easy to operate, the Kolene process conserves man hours and materials, strips large or small hooks and racks clean in 5 seconds to 4 minutes! Strips rejects clean for repainting in a matter of seconds! *Used by leading manufacturers!* Write for details!

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- **Introduction of new kind of finish adds sales impact to Simmons' line**
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- **Improved product appeal typifies benefits of working with Du Pont**

In developing the new "room of tomorrow" furniture line for hotels and motels, the Simmons Co. specified a finish with dynamic sales appeal . . . yet production costs had to be low.

The answer was Du Pont "Lucite" Acrylic Enamel—a new lustrous finish formulated in a wide variety of decorator colors. Du Pont specialists helped Simmons convert from conventionalenamelto"Lucite" *without changes in costly finishing equipment.*

Like Simmons, most manufacturers can benefit when experienced Du Pont personnel work with them to assure efficient use of industrial finishes. Here is experience in depth . . . from technically trained Du Pont service men and the field service laboratories of the world's foremost paint-research organization.

Du Pont specialists have the background needed to apply finishes by any method in practically any industry. They'll recommend a finishing system that can solve your particular problem . . . work with your personnel on a continuing basis. Best of all, *they can help you develop better finishing at lower costs!*

Forfurtherinformation,write: E. I. du Pont de Nemours & Co. (Inc.), 2502 Nemours Building, Wilmington 98, Delaware.

PRESSURE POTS containing "Lucite" Enamel are checked. Each hue sparkles in a diamond-clear "Lucite" base, a powerful sales look for this Simmons line!

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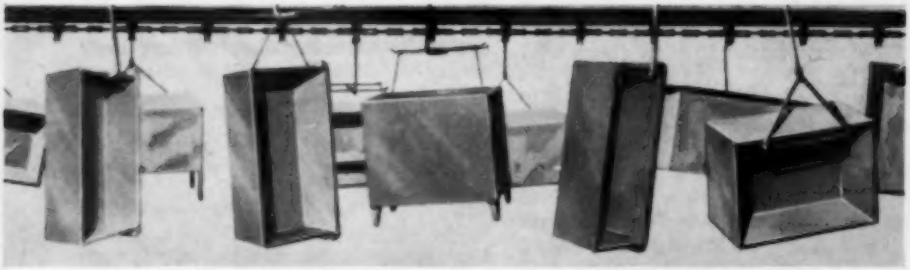
SPRAY OPERATION assures a uniform coating of "Lucite" Acrylic Enamel on the furniture pieces. Du Pont specialists worked closely with Simmons to convert this spray line to "Lucite" without changing finishing equipment. Result: minimum downtime, no change-over costs. Du Pont service men call regularly to assure continued high efficiency.

REGULAR MEETINGS between Simmons and Du Pont personnel keep customer informed about latest finishing developments. Here, talking it over, are W. C. Van Clief, Jr., manager of engineering, L. H. Weyrough, division general manager, H. A. Norman, finishing supt., R. C. Costello, manager of purchasing, O. M. Simpson, Du Pont salesman.

furniture— it's Du Pont's tomorrow "LUCITE® Acrylic Enamel



READY FOR DELIVERY. Completed furniture with baked-on "Lucite" Enamel emerges from drying ovens en route to shipping room. "Lucite" stays bright and beautiful longer than conventional finishes . . . resists printing, scratching, chipping, cracking and burning exceptionally well. Water rolls off . . . dirt slides off the jewel-smooth finish, assuring easy maintenance.

DU PONT

Better Things for Better Living . . . *through Chemistry*

FOLLOW-THROUGH—*Sets Today's Production Pace*

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LETTERS from READERS

Correction in Article on "Bell Helicopter's New Epoxy-Acrylic Finish"

It has just been discovered that very critical errors of primer thickness references were printed in the recent article on Bell Helicopter's New Epoxy-Acrylic Finish. My method of writing in tenths of a thousanth (.0001-in.), is often times very confusing to finishes people. In the draft of the article I designated the epoxy dry film thickness as .0003-in. to .0004-in., which reads three to four ten-thousandths of an inch. In two places, twice at top right-hand column, page 26, and near the bottom of left hand column, page 30, the thickness should read in *tenths of a mil instead of mils.*

This error in thickness designation can be very misleading to those who might be looking for just such a finish system as we have, but *they would definitely frown on a finish with a primer in the thickness range of 3 to 4 mils.*

I might add that my recent visit to Army in St. Louis, Air Force in Dayton, and Navy in Washington, found them all very much interested and currently working with 2-part systems such as we have disclosed.—*R. F. Howard, Material and Process Group Engineer, Bell Helicopter Corp.*

That Viscosity Article

We have had considerable interest in the article on "Viscosity Measurement," which appeared in the Feb. issue of *Industrial Finishing* (pages 30-34). For use in our own sales organization, we would like permission to reproduce this article on an 8½x 11-in. page for easy reference.—*Gray Co., Inc.*

You have our permission.—*Editor.*

Why I Read the Ads

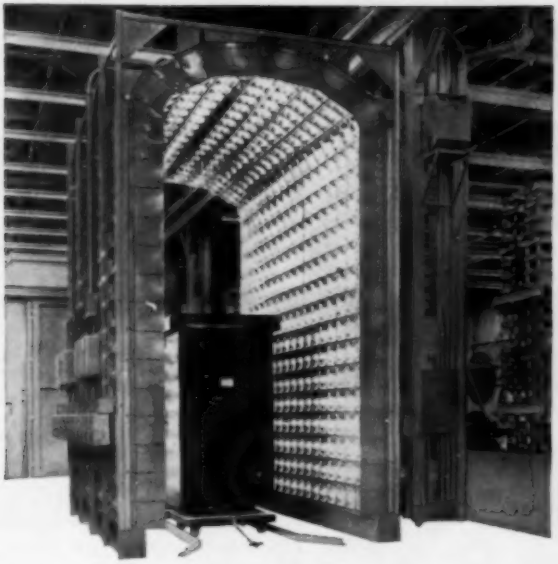
Please send me, if available, a reprint or tear sheet of the article, "Why I Read the Advertisements" by George Grant, as published in Dec. 1959 issue, page 68.—*G. B. R., Executive V. P.*

We are sending you a tear sheet of the article. This article, by the way, contains some new ideas that are worth thinking about. Every busy executive should read it.—*Editor.*

Will Take Paint Sludge

We have subscribed to your magazine for several years now and have found in your letters to the Editor that many people are looking for an outlet to dispose of their waste, sludges, excess inventories of obsolete paints, etc.

While we do not process sludges, we feel ourselves to be the best outlet for any and all types of paints, lacquers, primers, sealers, varnishes, resins, pigments, pastes—almost anything that goes into the manufacture of paint. We purchase these products almost anywhere east of the Missis-



at Hudson Falls, New York . . .

G. E. BAKES PAINTS ON VARIOUS-SIZE CAPACITOR HOUSINGS . . . WITH SINGLE FOSTORIA INFRA-RED OVEN

The need was for a paint-baking oven that could economically and satisfactorily handle both large and small sizes of General Electric capacitor housings. Fostoria designed and built an oven that met G. E.'s needs completely.

Here's the story:
The housings—ranging from 6′ to 12′ high—are coated with a Glyptal* type of paint, formulated to withstand rugged outdoor weather conditions. Paint specs call for a total bake of 30 minutes at 300°F. After exhaustive lab tests at Fostoria, the oven was designed to provide completely zoned operation, thus enabling proper baking of variously sized and shaped housings. Zones of lamp banks are used only as needed.

Correct baking and product temperatures are also achieved by varying lamp wattages within the various oven zones, plus input controllers in the zone circuits themselves. Maximum efficiency during all baking sequences is made possible through careful over-all oven design.

Fostoria Infra-Red ovens and systems are engineered for a wide range of industrial heating applications . . . saving time, money, space, labor with every installation. Write for "Radiant Heat —Applications Unlimited." Fostoria Corporation, Fostoria, Ohio.

Fostoria Ovens are used for

- baking • dehydrating
- drying • preheating
- many other industrial heating applications.

FOSTORIA

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sippi River and can use almost anything that is sold, whether in large or small quantities. This, of course, completely eliminates the necessity of spending money to haul these to a dump and, in addition, the company will realize some return for these erstwhile valuable items.

We have occasionally run an ad in your magazine, letting people know of our willingness to purchase these items, but we feel that you would be doing your customers a service if you would let them know, at least on request, of our company's willingness to buy.—*Michigan Industrial Finishes Corp., 9045 Vincent, Detroit 11, Mich.*

"When does your vacation start, Whipperton —the scheduled one, I mean . . . . ."

We Do Teflon Coating Too And That Ain't All!

It's nice to know so many of your readers have inquired about the availability of Teflon coating applications. However, in your "Letters from Readers" column for March 1960, page 110, you printed a letter from just one applicator who requested the opportunity to assist any of your readers interested in Teflon coatings.

We would like to go on record as saying that The National Glaco Chemical Corp. is in the Teflon coating business too—and that "ain't" all. Actually, we are nation-wide applicators with a complete custom coating service that includes the fluorocarbons (Teflon and Kel-F), Penton, epoxy resins and silicones.

Glaco has been a pioneer in the development of specialized coating applications from the very beginning and has plants coast-to-coast, offering fast efficient service. With highly specialized equipment and experienced technicians, Glaco can handle any specific coating need at a low unit cost, whether it be small experimental quantities or high-volume production.

If your readers are interested in obtaining further information on custom coatings, we have just prepared a 12-page, full-color brochure which outlines some properties and applications of special coatings. They may obtain a copy by writing to: Industrial Coatings Divn., The National Glaco Chemical Corp., 1949 N. Cicero Ave., Chicago 39, Ill.—*R. L. Caldwell, Sales & Product Manager.*

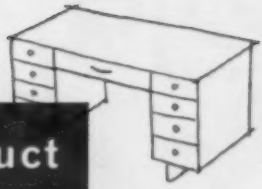
Meter to Measure Flow

In December 1959 issue, page 84, you mention "Meter to Measure Flow." We are interested in such a meter to measure our lacquer flow. —*W. I. W.*

Try Neptune Meter Co., 50 W. 50th St., New York 20, N. Y.—*Editor.*

Cartridge Spray Gun

Somewhere I have seen information on a small portable spray gun which is activated by a CO^2 cartridge. A pint or a quart can of paint is at-



Whatever Your Product

If It's Coated

LILLY Has A Finish For It

• Specifically, if you manufacture furniture—or ANY wood product—a quality LILLY finish can be formulated and furnished to fit your needs.

The LILLY Company, of High Point, N. C., the largest plant in the country manufacturing wood furniture finishes exclusively, maintains extensive laboratories staffed with some of the finest wood finishes craftsmen in the country. Similar facilities at LILLY Varnish Company in Indianapolis and the LILLY Varnish Company in Gardner, Mass., are always at your service for the formulation of specific finishes "tailor-made" to meet your most exacting requirements.

LILLY has been providing industrial product finishes to manufacturers for ninety-five years. From this history and experience come the ingredients of quality and dependability that go into every LILLY product.

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Productos Aurolin • S. A., Mexico City

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tached to the gun. A CO^2 cartridge is dropped into a small container on the gun which provides the pressure for spraying. I am eager to find the manufacturer of this gun or a source of supply. . . .—*C. L.*

Perhaps you have in mind a product offered by Sullivan-Becker Co., 6705 14th Ave., Kenosha, Wisc.—*Ed.*

Many Special Finishes

As manufacturers of a complete line of industrial finishing materials, we look forward each month to the arrival of the *Industrial Finishing Magazine* and the *News and Comment* edition. Your publications clearly reflect the needs and problems of the industry and permit our Special Technical Service Laboratory, as well as other manufacturers, to pattern their research and development along the indicated lines.

During these many years we have introduced coatings for a wide variety of surfaces which were problems at the time, but which are now established and accepted standards. The solution to any one of many problems which may be confronting some of your readers is, in all probability, representative of our regular production schedule. Your article in the March 25th issue of *News and Comment*—the one entitled, "Use Publicity; Exploit the Merits of Your Products"—clearly points out that too few industrial manufacturers are aware of the tremendous diversification of coatings available to them for their specific needs.

To fill this lag in knowledge, United Lacquer has just compiled and released a Color Guide of Industrial Finishes. This brochure, which is available to anyone merely for the asking, clearly illustrates the many different types of finishes for various strata, which can be produced in a great variety of colors and sheens. It further points out that any problems can be readily resolved from a backlog of years of experience and know-how. . . .—*United Lacquer Mfg. Co.*

"Saves endless trips and waste of time to the water cooler!"

Roller Coating and Winding On Reels

We are looking for a manufacturer of a paint roller coating machine, to coat reels of slender metal. This material is going to be used in corset stays in the corset and brassiere industry.

We have an oven with which to cure a baking enamel type finish and need just the roller coater itself, to apply the material. Our intention is to run several strips of the material at one time in a continuous process through the roller coater, into the oven, then to be rewound. Uniform-

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Thank You!

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ity of the application is important, but coating the edges of the material to insure a rustproof coating is more important.

Are there any manufacturers in the East of this type of machine? If so, could you please supply their names? I have already written to the Gasway Corp. in Chicago and L. R. Wallace & Co. in Pasadena, Calif., but both of these companies are at a distance and communications are difficult.—*M. W. P. ("Kant-Rust" wire forms).*

In a letter we are naming a few manufacturers of roller coaters in eastern locations.—*Editor.*

'Mr. Haverslip, you've been working here for six years—isn't it about time we put in some overtime."

Articles of Great Interest

Throughout the years, we have found *Industrial Finishing* to be the magazine carrying articles of the greatest interest. We have often found items which we would like to reprint for distribution to our customers, and articles from which we would like to quote. We would like to know your policy on this procedure and if we could have your permission to quote from the articles which appear in your publication.

In particular, in the February 1960 issue, we would like to order 1,000 reprints of the article, "Viscosity Measurement." In our opinion, this is one of the most lucid and interesting writings on viscosity which we have seen. We would also like to use, in our promotional letters, some of the ideas which appear in the article, "Cost Reduction Begins in the Finishing Department."

I would also like to order six copies of the February 1960 issue for use in our own organization.

We want to congratulate you on a fine magazine and the ability to sustain quality and interest over the years.—*Conforming Matrix Corp.*

Thank you. We are sending you the extra copies of Feb. issue.

You are at liberty to make reprints of, or quote from articles that appear in I. F. All we ask is that you include a credit line on each reprint to the effect that the article is "Reprinted from ..... issue of Industrial Finishing, Indianapolis, Ind."—*Editor.*

Anti-Static Devices

In the March issue of *Industrial Finishing* magazine, we found an article which was very interesting entitled, "Anti-Static Devices Repel Flying Dust." We noted that this article was signed by a Mr. N. Gaynes and are wondering if you might tell us how we could contact Mr. Gaynes.

The supervision of our plant gets a great deal out of your publication. I want you to know that we do appreciate the opportunity of receiving it and that it is beneficial. If you can assist us in locating the writer of this

KELVINATOR

Washers and Dryers . . .

RANSBURG

Get their High Quality Finish with

RANSBURG NO. 2 PROCESS

Kelvinator Division of American Motors switched from hand spray to RANSBURG No. 2 PROCESS Electro-Spray to meet increased production schedules . . . improve the quality of the finish . . . and lower finishing costs.

SAVINGS EXCEEDED EXPECTATIONS

Demonstration tests in the Ransburg labs indicated substantial savings in finishing costs, but in actual production, SAVINGS ARE EVEN GREATER than estimated. That's why Kelvinator is now considering RANSBURG Electrostatic Spray Painting for other products of their "white goods" line: Refrigerators . . . Home Freezers . . . Ice Cream Cabinets . . . Electric Ranges, as well as some components.

NO REASON WHY YOU CAN'T DO IT, TOO!

Want to know how Ransburg No. 2 Process can improve the quality of YOUR painted products, and at the same time, cut YOUR paint and labor costs? Write for our No. 2 Process brochure. Or, if your production doesn't justify automatic painting, let us tell you about the new No. 2 Process Electrostatic Hand Gun which can be used in either conveyorized, or non-conveyorized painting.

RANSBURG
Electro-Coating Corp.

Box-23122, Indianapolis 23, Indiana

For more data, circle 180 on colored card.

article, which started on page 97, we would greatly appreciate it.—*M. C. L., V. P. Mfg.*

In a letter we are giving you Mr. Gaynes' address. For anti-static devices, have you seen The Simco Co.'s ad which has been running every-other month? One appears in April issue, page 120.—*Editor.*

Baked Enamel on Buttons

We want to put a baked enamel coating on some of our buttons. We find that because of price we must do this on a mass-production basis.

We know that coatings are put on some objects by air-drying while tumbling. Is there some tumbling process that we could use in conjunction with a baked enamel? Is there such a thing as a heated tumbler, and is this a common process in the industry?

We are totally unfamiliar with this process and therefore would appreciate all of the help you can give us. To sum it all up, we are interested in a cheap method of putting a baked enamel on some pieces like buttons. —*Merit Plastics.*

In a letter we are giving you the names and addresses of manufacturers of tumbling drums and dip-whirl coating machines.—*Editor.*

Cotton Wiping Cloths

We always find your Letters from Readers to be a very interesting page, and never fail to read them as a guide to what is new and desired among manufacturers who have finishing problems.

We have a problem today that your information system may be able to help us with. In finishing church pews we have always done a filler, stain, wipe-off job, and now we find that cotton rags are becoming less available because of plastic materials, such as dacrons, nylons, orlons, etc. (which are less absorbent) coming into use.

We would like to have the names of sources whereby we could obtain cotton rags for wiping off excess stains and fillers.—*M. C. Co.*

Try Leshner Corp., Hamilton, Ohio. —*Editor.*

Filler Coaters

We are contemplating using a knifing system in applying filler to small pieces and would like to have any information available on this process.—*Plyfloor, Inc.*

There is a firm that makes bottom knife coaters for filling and sealing wood surfaces. They also make reverse roller coaters for filling and smoothing hardboard surfaces. It is Schmutz Mfg. Co., 1600 W. Main St., Louisville 3, Ky. Perhaps they can supply what you have in mind.—*Ed.*

Force Drying Filler

We are considering the installation of forced drying on paste filler of wood cabinets, and would appreciate it if you would supply us with some information. Also, we want to know if infrared heating is recommended for that purpose.—*B. W. Co.*

In a letter we are naming some manufacturers of drying equipment. We understand that some concerns are meeting with success in using infrared electric heat to force dry finishes in and on wood surfaces.—*Ed.*

NEW 50" 2-COLOR GRAINING PRINTER

Quick facts on the new 916 2-color printer: Handles material up to 50" widths... cylinder diameter 16". Also, may be interchanged on the job to handle cylinders of 9" or 12" diameter. Quick change doctor blade, conveyorized feed system, powered by explosion proof electric motor and switch. 2-color register.

Today the Woodworking Industry is offered something new in a modern 2-color graining machine. It's the Roto Finishing System's advanced model No. 916... the result of close cooperation between machine manufacturing and needs of industry. Sturdily built, amply powered, the 916 handles any receptive surface... wood, plywood, composition board, paper or metal. Conveyorized feeds speed handling at variable rates up to 100 ft. per minute. Printing cylinders may reproduce any desired wood or other pattern in flawless facsimile on the printed surface. Finishes lower grade of material to high quality finish, thus increasing its value and market potential.

Roto Finishing Systems produces 13 different graining and coating machines, equipment and cylinders for the woodworking industry. Write now for further information.

Roto FINISHING SYSTEMS

1501 So. Alameda St. Compton, California

Telephone: NEwmark 8-6691, if you need service.

For more data, circle 188 on colored card.

QUESTIONS and ANSWERS

To Paint Little Blocks

We are starting a project that calls for the finishing of ⅜x½x1-in. soft pine wood blocks. We want to sand these blocks and also paint them in our tumbling barrels. In the past we have read articles in *Industrial Finishing*, explaining this process, but now we cannot seem to locate these articles. Can you help us?—*D. L. Co.*

If these soft wood blocks have flat sides and square corners, such as square building blocks or something of that kind, we question whether you will have any success in either smoothing them or coating them by the tumbling process. This tumbling process is really best adapted to round turnings.

You might try this: Place a batch of the little wooden blocks in a wire mesh basket that has a cover, dip them in the coating material (which should be thin). Lift the basket out of the tank of material, jiggle it around to help the excess material drain off quickly and then dump the dip-coated blocks on a screen tray; spread them out and let the coating dry. Perhaps the screen tray should be jiggled occasionally to prevent any coated blocks from sticking to it.

For spray painting them, try this: Use double surface (2 sides) pressure sensitive tape and apply it to a convenient size panel of plywood. Then adhere your small wooden blocks to the sticky surface, keeping them well separated; you might put 50 to 100 blocks on one panel. Now they are ready for spray painting—that is five of the six sides are exposed. After they have been painted and the paint is dry enough to permit handling, lift the blocks off, turn them so the unfinished sides are up and spray again. Let them stay stuck to the adhesive tape until they are dry.

Another plan would be to use the same plywood panel as a mounting board, but instead of using double-face adhesive tape, have rows of sharp nail or brad points sticking up say ¼-in. to ⅜-in. above the flat surface of the panel. Stick the blocks onto these sharp points, so the end-wood of the blocks contacts the projecting metal points, one block to each point.

This would also call for two sprayings in order to coat the ends that are hidden and remain uncoated during the first coating. The single small hole left by the nail point in the painted end wood during the second coating might not be objectionable.

Yes, this positioning of the blocks for spray painting calls for individual handling of each block, but nimble fingered girls could do that work very rapidly and skillfully.—*A. J. F.*

Stripping Finishes Off Wood Furniture

We have called on the best suppliers of paint stripping materials but they always send local salesmen who are not really able to advise us. It seems possible that intelligent studies of comparative stripping methods should be available so that we could profit by the experience of others instead of experimenting ourselves.

"thirty copies." That's readership response!

INLAND STEEL CONTAINER COMPANY

DIVISION OF INLAND STEEL COMPANY

GENERAL OFFICES: 6532 SOUTH MENARD AVENUE
CHICAGO 38, ILLINOIS

PLANTS
CHICAGO
CLEVELAND
GREENVILLE, OHIO
JERSEY CITY
NEW ORLEANS

March 8, 1960

Practical Publications, Inc.
1142 North Meridian Street
Indianapolis 4, Indiana

Gentlemen:

The February issue of "Industrial Finishing" Magazine carried an extremely interesting article entitled "Cost Reduction Begins In The Finishing Department".

We would like to pass along this information to all our concerned personnel. Please advise us if reprints are available and, if so, what the cost would be for thirty (30) copies.

Sincerely,

S. P. Yacknin
Central Staff
Industrial Engineer

SPY/jh

We read so much in the ad books about reader response as a good measuring stick in the selection of media. When a big name firm like Inland Steel Container Company requests "thirty" reprints of an article in Industrial Finishing magazine for distribution to all its concerned personnel, we say "that's readership response!" But it's only one example. Let us tell you more. Also, let us send you our latest BPA Publisher's Statement and other pertinent data.

INDUSTRIAL FINISHING, Indianapolis 4

Now . . . .

forty
million
gallon
reasons
why we
lead the
field!

BARKER CHEMICAL COMPANY

"Forty Million Gallon Reasons
Why We Lead The Field"

700 EAST 138TH STREET, CHICAGO 27, ILLINOIS

This letter is concerned only with finishes on wood furniture and, luckily, we have not had much need to strip the difficult catalytic finishes yet.

For several years we have kept two men busy every day stripping wood furniture for refinishing. We have tried many materials but have adopted a thin bodied material ($1.25 per gallon) made probably of acetone, benzene (or other) and alcohol plus paraffin. We use shallow pans to catch the drippings and we "soup" the stripper up on the furniture with cans. As it gets contaminated with lacquers, varnishes, etc., it becomes sticky, messy, and hard to handle, and it stains the insides of drawers or cabinets. We have found no way to filter or rejuvenate this used material.

Also, the paraffin has always been a headache. We rinse the stripped furniture with naphtha on a brush and wipe it off with clean rags; and, as a precaution, we sand all surfaces.

We have thought of developing special pans with sumps, strainers and pumps; and we have considered using a vapor degreaser, either for wax removal or for actual breakdown of the finish, if this could be done without attacking the glued joints and veneers. We would like to minimize the fire and health hazard and lower our high consumption of rubber gloves.

If nothing spectacular can be done, we would be very happy to simply improve our present operation by providing correct tools and equipment to the men who have to work in this mess every day.—*S. Mfg. Co.*

About all I can offer you is *sympathy*. Stripping wood is just about the nastiest job that you can ask for . . . . .

On metals you can use strong caustics and phenolic compounds, along with heat, because you don't have to worry about damaging the

←— For more data, circle 227 on colored card.

surface. On wood you are limited to strong solvents (as you guessed) using wax to keep them in contact and to limit their evaporation.

I have never known anyone who succeeded in reclaiming or reusing wood strippers. You might try spraying the stripper on, using a low-pressure gun as a time-saver. Also, rubing with very coarse steel wool helps the removal.

I would not suggest buying a vapor-degreaser because wood is not a good enough heat conductor to get much vapor condensation. However, pumping warm trichlorethylene over the furniture might lift the paint. As you say, it might also damage the glue or veneer. It is quite toxic, so adequate ventilation would be necessary.

I have never tried removing paint from wood by sandblasting. I have heard that it requires a considerable degree of skill which, when mastered, produces fast clean work. You can appreciate that no one can get careless when sand blasting wood, or he would have nothing left.—*Conrad.*

Due to the very nature of the removing process, it is at best a messy operation. The basic problem is to first soften up and loosen the gum and resin content of the film, and then remove it either by scraping or scrubbing. The old time paint and varnish remover was a physical combination of acetone, benzole and some other solvents and wax. The purpose of the last named ingredient is to retard the evaporation rate and to hold the softened film soft so it can be scraped off the surface. This wax then has to be washed off and out of the pores of the wood.

A number of waxless removers have been developed with the claim that subsequent washing is unnecessary; however it has been my observation and experience that washing the surface afterwards is advisable. [*To 90*]

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Film tends to bridge over minor surface defects with result that rubbed and polished finish is far superior. A common expression describing this is "It looks like glass."

Very high cold check resistance

Resistance to staining by such objects as rubber based articles like telephone wire, ashtrays, etc.

Clear
Acetate
Butyrate
WOOD
LACQUER
. . . embodying all these distinctive qualities to provide a superior finish!

Dries with the speed of a nitrocellulose lacquer and does not require heat to reach maximum hardness. It has a "built-in" drying and curing element

Try 5 gallons of this Wood Lacquer at the drum price on a money-back guarantee.

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"Forty Million Gallon Reasons Why We Lead The Field"
700 EAST 138TH STREET, CHICAGO 27, ILLINOIS

Removing a finish is not a part of the finishing operation but it is a necessary collateral process, and so any industrial salesman should be in a position to meet the challenge. If your regular industrial paint salesman does not develop the required information the next step is to call in a specialty salesman who handles finish removers. Some manufacturers of excellent strippers and removers advertise in this magazine. Call on them.

Your inquiry mentions "rubber gloves"; it might be pointed out that there are several synthetic rubber gloves which give quite long service in resisting abrasion as well as the solvents employed. Further, this inquiry is for removing organic coatings from wood but the same approach would apply if the problem referred to any metal. Consult the specialist, the manufacturer of removers. —*Chas. R. Brown.*

Filler For Archery Bow Handles?

During the past two years it has become desirable to make the handle section of our archery bows out of imported hardwoods such as East India Rosewood, Brazilian Rosewood, Bubinga, Hondouras Mahogany and Zebrawood, because of their natural dark colors and rich appearance. Formerly, hard maple was used almost exclusively. The change to imported woods, and to American walnut as well, has added the complication of filling to our finishing procedure, so as to hide the open grain of the dark woods.

We have tried several commercially available wood fillers; they do the job, but not nearly as efficiently or quickly as we would like. We believe that the filling of open grain on a small rounded shape, such as a bow handle, is a more difficult operation than filling a flat surface such as a table top, and we are plagued by the necessity of re-filling, rejects, etc.

We are wondering if you have knowledge of any recent improvements in filling materials? If so, can you make any suggestions to us? We have the idea that the variety of recently developed plastic resins should certainly bring forth a binder material capable of holding filler in place more efficiently than do the old type varnishes. We will appreciate having your comments . . . .—*B. Archery Co.*

For over 20 years the wood industry has been searching for a miraculous material that would result in more fool-proof, better working wood fillers. There have been many that promised much at first glance; but if any manufacturer has really found the answer, he is certainly keeping it a closely guarded secret. There are many factors—mostly concerned with cost, chemical or mechanical properties—that automatically eliminate 90% of all new materials from consideration as an ingredient of wood fillers.

There are no easy methods for filling small, carved shapes, such as bow handles. However, there is a wide difference in the ability of various companies to make wood fillers. On a separate sheet I am listing a few companies that I do know make excellent fillers—these being only from my own personal experience.

I am enclosing a folder on a process which purports to eliminate the need for filling (Super Microseal by General Plywood Corp.). I saw this work a couple of years ago, and it did show considerable promise for panels. However, it is possible that it has been adapted to smaller work by now.

Another suggestion: Why not use

more fine textured woods such as birch and maple, staining them with N.G.R. stains for the dark shades which are so popular?

Finally, maybe you are being too fussy. The exotic woods do have beautiful figures, but is it really necessary to fill them completely? The firearms industry has fared pretty well without flush finishes on open textured woods. I would rub down the finished handles with very fine steel wool and wax, and let it go at that.

Both my son and myself are very enthusiastic bowmen. We have three of your bows in the house, but we are more sold on their excellent shooting qualities and ability to take abuse than we are in their finish being perfect.—*Geo. Conrad.*

To Paint Bamboo

Please recommend a supplier of paint that will adhere to highly polished bamboo, or a process that can be used to make lacquer adhere to same.—*D. H. Co.*

Men of experience tell us there is no paint that will adhere permanently to polished bamboo surfaces. The polished surface will have to be slightly "etched." Best method to use is to lightly sandblast the bamboo surface with a very fine abrasive to "kill" the polish. When this has been done you will be able to coat the bamboo with either enamel or lacquer, using the same materials and methods you would use for coating any wood surface.

If you have only a few pieces to finish, you could have the sandblasting done by others. If it is to be a continuing operation, small sandblast equipment suitable for this type of work can be bought from the Pruden Tool Co., Inc., 310 W. 68th St., New York 23, N. Y.—*P. C. B.*

the finest lacquer for high impact styrene

New—from Schwartz Chemical Co., one of the most respected names in the plastics industry.

REZ-N-LAC-C was developed for fast, economical, spray application on all types of modified styrenes, acrylics and ABS resins.

Sprays on easily. Dries rapidly. Produces a smooth, tough, permanent high gloss finish. Excellent adhesion. Will withstand severest scotch tape and cross hatch scratch tests.

REZ-N-LAC-C comes in a full range of standard colors. Special colors are matched to samples at no extra cost. Available in qt., gal. and 55 gal. drums.

Samples of this newest development from Schwartz Chemical Co., are available upon request.

Serving the needs of the plastic industry
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MANUFACTURERS OF DYES—LACQUERS—
CLEANERS—ADHESIVES— FOR PLASTICS

For more data, circle 229 on colored card.

Cratering Problem in Painting Fiberglass

For some time we have had a "cratering" problem in painting fiberglass material. We believe this condition to be due to small capiliaries in the polyester fiberglass material that are very difficult, or even impossible, to locate in the raw material or after the prime coat, which is applied for a smooth finish after sanding.

After the enamel is applied and baked these craters or pits are quite obvious. They vary in size and extent. If the article with craters is sanded and repainted, they reappear.

Our fiberglass suppliers are of the opinion that this condition is due to the paint or baking cycle. Our paint suppliers strongly disagree and I am of their opinion, as no metal parts show this condition after identical finishing procedures.

This condition is not to be confused with the "fish eyes" of silicone. They are deep, pin-point holes in the finish.—*E.M.*

I have taken up this problem with the personnel in a local paint company's lab and they tell me that this cratering or pitting is typical of fiberglass. They have had considerable experience with fiberglass and have experimented in an effort to eliminate the trouble. They have found that moisture and dirt particles contribute to the cratering.

Any "seeds" in the fiberglass will contribute to the forming of a crater in that particular area. First the fiberglass must be absolutely clean; this means not just clean as the word is used in connection with a metal product, but what one might call *chemically clean* and absolutely free of dust particles.

Next the compressed air must be absolutely dry. They installed one demoisturizer in the line just ahead of the spray gun; then they installed a second demoisturizer in the same line. With all of this care, they managed to get an acceptable job. It seems to the lab people that cratering is due to a lack of flow or a failure of the finish to congeal over the entire surface area, and that both moisture and dirt particles aggravate the condition and cause pitting or cratering wherever there is a "seed" in the fiberglass or a dirt particle or a tiny drop of moisture, even so small that it could not be detected with the naked eye.—*J.Z.*

It would seem that the cratering is caused by the expansion of air in the rather porous substrate. I am inclined to agree that the fault lies in the nature of the fiberglass rather than the applied coating. My suggestion is to find out just how high a temperature can be used without the objectionable cratering appearing. Then go to the paint supplier and ask for a baking enamel that will cure out at that heat, and in the shortest length of time.

I had a somewhat similar situation several years ago. We were baking on Masonite hardboard and found that the binder or resins in the hardboard bubbled at the currently used temperature. We found that the board would stand 225° F. Then we formulated a baking enamel to cure out at that temperature. Yes, to be sure, we had to bake the finish slightly longer, but that was the answer; and it is a possible approach in this case.

For what it is worth, reference is made to pages 83 and 84 of January 1960 issue of *Industrial Finishing*, under the title, "Painting Fiberglass". That inquiry originated in South Africa. While the problems are not identical, that article may be of interest.—*Chas. R. Brown.*

Bond® TACK CLOTH for a SPECK-FREE FINISH EVERY TIME!

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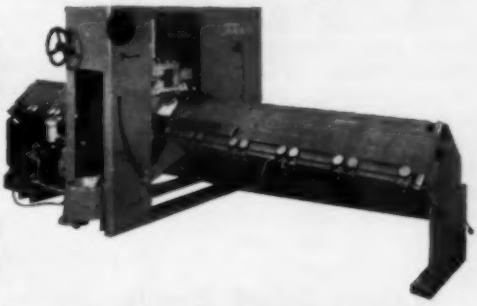

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Cleaning Conveyor Hooks

We are interested in some method of cleaning the parts hangers and hooks used on our conveyorized flow-coat paint line, without removing them from the conveyor and possibly by running the conveyor at standard speed.

At the present time we remove these hangers from conveyor and let them soak in our cleaning tanks. This involves considerable labor and also requires a duplicate set of hangers to replace the hangers being cleaned.—*R. L. Corp.*

Illustrations of how this is done have appeared in full-page, 2-color advertisements in past issues of this magazine. If you have plenty of space between the unloading and loading stations, arrange for a dip in your conveyor line, a tank of stripping compound and a sheet metal enclosure. Use a strong stripper that will really remove the paint during a brief dipping. You will need a drain area within the sheet metal enclosure and perhaps outside you may need a ventilating fan to blow the wet surfaces dry. Some of the manufacturers and suppliers of metal cleaning compounds and strippers can supply you the materials and detailed specifications for such a setup. —*N. T. C.*

Walnut Salad Bowls Non-Toxic Finish

We manufacture a line of high quality black walnut salad bowls and are in need of some information regarding an oil-rubbed finish. This finish must be non-toxic and must not spot when exposed to drops of water.

Could you furnish us with the name of the concern that makes up an oil-rubbed finish, or possibly someone who could give us other information in reference to this?—*B. W. Co.*

The old time method of finishing wood salad bowls was to dip them in hot beeswax. After draining, the bowl was wiped off and hand polished. This method gives a waterproof and durable finish.

I have consulted with one of my good friends in the laboratory and he has the following to say:

"Dip the bowls in a very thin vinyl chloride solution (about 10% solids). Leave bowls in the solution for several minutes to insure penertation of the coating. Wipe off the excess material and allow the coated bowls to dry. Then polish out. The thinner used would either be a ketone or one of the aromatic solvents".

I was assured that this makes an excellent penetrating and lasting waterproof finish, and it is pleasing in appearance. It would be non-toxic. Vinyl chloride is widely used in can coatings and on other surfaces that come in contact with food.

I believe that any of the major paint manufacturers, and most of the smaller and/or regional manufacturers, can meet your requirements. Probably the regular supplier could do so.—*Chas. R. Brown.*

New Coatings Symposium

The Coatings Technology Department at the North Dakota Agricultural College, Fargo, N. D., announces that the second Symposium on "New Coatings and New Coatings Raw Materials," will be held in the School of Chemical Technology on the college campus June 6-9, 1960.

As many as 18 papers prepared by leading authorities for this occasion, will be read and discussed.

The enrollment fee is $25.00. Housing can be arranged on the campus at $12.00 (double room) for four nights. Meals will be available in the Memorial Union at about $3.00 per day. Accommodations can also be had at local hotels.

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Cleaning and Prime Coating Chevrolet Body Parts

Parts for automobile bodies entering the 7-stage washer which is 250-ft. in length.

MORE EFFICIENT facilities are helping to produce smooth, uniform thickness finishes on automobile bodies, while at the same time helping to reduce labor costs at Chevrolet's assembly plant in St. Louis, Mo.

A rearrangement program at the St. Louis plant during 1959 included modernization of facilities for the application of a primer coat to sheet metal body parts. Among other changes, the dip tank method was replaced by a flow coating process which also provides for a more economical use of paint primer.

Nerve center for this new installation is a push-button panelboard. Controlled from this position, by one operator, are two flow coat machines. One is for truck parts; the other is for passenger car parts, including hoods, fenders and all other small sheet metal parts.

Body Parts Go Through a 7-Stage Pre-Treatment

Body parts arrive in "raw metal" form and are hung on the overhead monorail conveyors. Entering a 7-stage washer, the protective coating previously applied to all freshly stamped parts is removed. The parts are submitted to a shower wash of alkaline cleaner. Then they move through two rinses and to the Bonderizer. Zinc phosphate is the

spray here; it is followed by a rinse with clear water and then a rinse in dilute chromic acid. The 7-stage passenger parts washer is about 250-ft. long. Since the truck-parts conveyor travels at only about half the speed of the passenger car line, the truck parts washer is only 140-ft. in length.

Parts are dried in separate truck and passenger dry-off ovens which operate at the same heat, although the passenger car oven is longer. The difference in conveyor speed is also the reason for a difference in the oven lengths.

Excess Paint is Filtered and Recirculated in Flow-Coater

Paint primer discharges from a 500-gallon tank. Excess primer from the flow coating operation is collected in the drain area, filtered to clean it, and then recirculated to be used again. The flow coating process used here applies the primer lightly all over—to a thickness of one mil no matter where the coating is measured or what is the shape of the part.

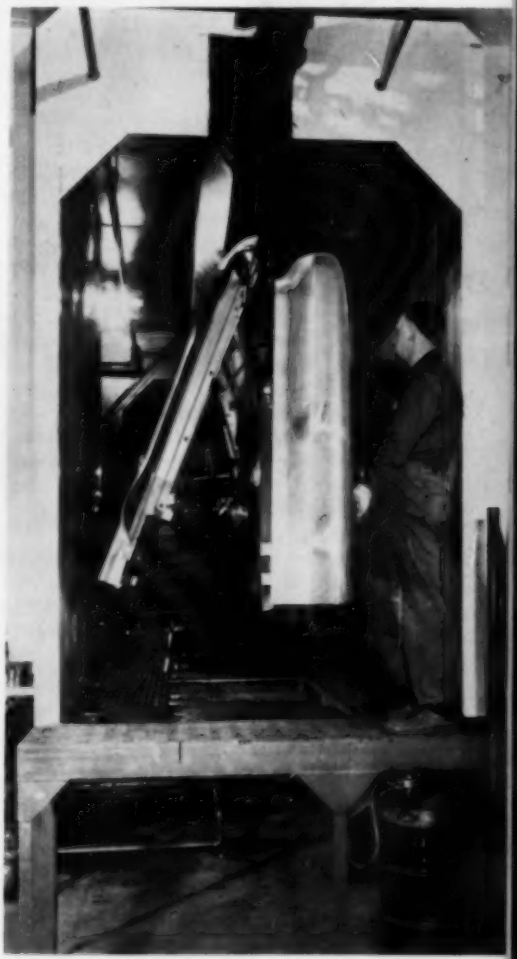
There is no tendency toward streaking and the coating material does not collect unevenly thick along the lower edges of the various parts being painted.

This installation was manufactured and installed according to specifications laid down by Chevrolet Division engineers. It was designed to fit into the assembly process and floor space available.

First in production in 1919, Chevrolet's St. Louis plant today occupies more than 2,500,000-sq.ft.

This new conveyorized setup includes seven-stage cleaning, Bonderizing and dry-off, plus the application of a priming coat by modern flow-coating.

Truck body parts entering the flow coating machine for a smooth uniform prime coat. Photographs, courtesy of Despatch Oven Co.



EDITORIALS

Who to See About Product Development

Do you plan to bring out a new product? Well, it may be desirable to consult with some of those who sit in their "ivory towers" and think and plan. They have a lot of knowledge based on experience and research. But don't overlook your own technical men. They too have some good ideas, and often they will come up with excellent answers to any suggestions or problems you present.

There are no exact rules for new product developments. In some cases an organizational chart shows the channels to follow. This could lead into a lot of delaying red tape. Of course, orderly procedure is necessary to the successful operation of any business, but it should be seasoned with a combination of practical flexibility and a large amount of driving enthusiasm. When it comes to new product development, management will do well to listen to ideas that spring from somewhat obscure sources, some that may appear to be far removed from the "ivory towers." —*P. C. B.*

Matching Color Samples Can Be Tricky

★ When a customer rejects a shipment of a new finishing material because it is off color—this is an unhappy situation for both the manufacturer and the customer. It is possible that the finish was not color matched properly. This happens. Many times, however, the fault is not with the color matcher, but with the color standard he is using. The customer may inadvertently supply an improper color standard. There are many ways this can happen.

The customer may send along a wet sample that is off color. Perhaps he didn't get the paint thoroughly mixed when he stirred it before taking off the sample. The standard may be an enamel that floods when sprayed. Unless the finish manufacturer knows whether the enamel is sprayed wet or rather dry, he may spray it differently than the customer does, and as a result he gets a different color. The color of a metallic enamel usually varies with the wetness of spray.

The customer may send a white card with a red enamel sprayed over it. The red usually does not have complete hiding and the white background throws the color off. The same thing would happen if a white were put over a black background. If a skimpy coat with incomplete hiding is applied over almost any background, the color will be somewhat different than it would be if a heavier coat with complete hiding were applied. Somewhat the opposite can happen too. Two 1-mil thickness coats of a white enamel could be sprayed on a metal panel. If another white enamel were matched to this panel by spraying one 1-mil coat, the two

enamels would not match.

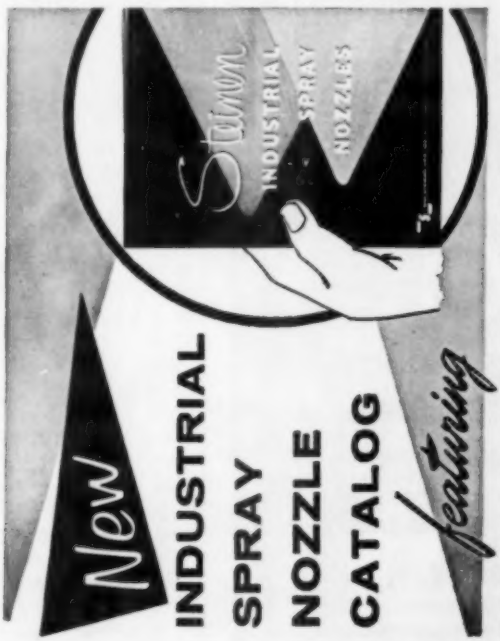
Sometimes a standard color chip has been handled so much or exposed so much that it is discolored or soiled and, as a result, it is no longer the original color. A panel of a standard color that is baked at the wrong schedule could easily be off in color. A color chip can also change with time or by being exposed to light. Sometimes a paint company is given the original standard color chip to match. If the actual color being used has drifted, the finish he sends will not be the color wanted, even though it matched the chip perfectly.

A little thought will usually enable you to avoid the pitfalls mentioned above. If possible it is best to send both a wet sample and a panel as a color standard. Then the finishes manufacturer is more likely to send you the correct color.—*G. Grant.*

Robert A. Began, Tech. S. R. For Body Bros. Inc.

Robert A. Began has been appointed Technical Service representative for Body Bros. Inc., Bedford, Ohio. Mr. Began will assist Body Bros. customers on all technical problems pertaining to industrial finishes.

Bob Began's entire business career has been in the industrial paint manufacturing field Prior to joining Body Bros. in 1950 Mr. Began was employed for several years with another paint manufacturer. From 1955 until his recent promotion he was plant superintendent. His industrial paint experience includes several years of development work in the laboratory which will be a help to many users of Body Bros. products in solving their paint problems.



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Alkyd Resins in Finishes; Where, When and How

NORMALLY, in the application of industrial finishes, the user's personnel may show little concern about the raw materials included in a coating. That is probably just as well, for in most cases the finisher is too busy with his own problems to be worried about what is in an enamel or lacquer. After all, this is strictly a formulation function and is best left to the chemist.

However, in applications that call for air drying enamels, particularly in wood finishing, sometimes it is desirable for the finisher to understand some of the problems involved, particularly in the use of alkyd resins.

To a polymer chemist an alkyd resin would be defined as the oil modified polycondensation product of the reaction of a polybasic acid with a polyhydric alcohol. For the finishing personnel it is best to state in simple language that an oil such as coconut, castor, soya, etc., is reacted with an acid such as phthalic and an alcohol such as glycerine. It is the variation of these constituents that varies the properties of the resins.

Let us consider only one of the possibilities, that is, the oil content or, as it is commonly called, oil "length." These are grouped into three classifications: Short oils in the range of 30% to 46%; medium oils, 46% to 56%; and long oils 56% plus. In industrial finishing, the short oil is most often used and will be considered here.

A finisher may

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want an air drying enamel that has excellent exterior durability and good resistance to cold check. He is supplied an excellent material but finds that for economic reasons he must have a faster dry. The formulator can easily speed up the drying (up to a point). The finisher also requests a harder, more mar-resistant finish. This also can be made. However, what would the consequence be? That is the problem we would like to point out here.

The first enamel submitted, let us say, contained an alkyd with an oil length of 42%. Substituting a resin with oil length of 35% would probably give the speed-up in drying and possibly harden the finish slightly, but it would probably decrease the exterior durability and lower the number of cold check cycles that could be expected. In other words, all other things being equal, a higher oil will tend to give better durability, flexibility and longer drying time.

Hardness and the speed of drying can be further improved by an addition of maleics, phenolics, or rosins. Here too a rapid reduction of exterior durability, increased yellowing, and more tendency toward cold checking would be quite apparent.

It becomes readily observed that industrial finishing formulation is a question of compromises. Unfortunately, the ultimate in coatings has not as yet been manufactured. In the formulation, bargaining procedure to gain one particular property normally means the sacrifice of another.

The object here is not to teach a course in polymer chemistry. Rather, it is intended to give the finisher a slight idea of the problems involved, particularly if at some future date he is called upon to develop a rigid finishing specification. As long as the finisher is cognizant of the compromise or "give and take" process, it will be possible for tighter and improved specifications to be developed. This would be a positive advantage to the whole industrial finishing industry.—*G. Orman.*

J. E. Taylor, Dist. Sales Mgr. For Nordson Corp.

James E. Taylor has been appointed District Sales Manager, responsible for sale of Nordson Airless Spray Equipment in the southeast area of the United States. New headquarters for the area will be announced soon.

Mr. Taylor, an industrial engineer, formerly was with General Motors; he was also a sales engineer for a manufacturer of conveyors.

Nordson Airless spray equipment is manufactured by Nordson Corp., 55 Jackson St., Amherst, Ohio.

For more data, circle 236 on colored card.

Salt Spray Tests Can Mislead You

SALT SPRAY TESTS are valuable guides, and like most laboratory determinations they are *indications of probabilities.* A salt spray test must be conducted very carefully, under rigid and exact controls, and by experienced personnel. Of course any one can run such a test if he has the equipment and follows the instructions, but usually this test is assigned to a laboratory that is all set up to do the work.

Very briefly the salt spray (fog) test is as follows: A saturated solution of salt (sodium chloride, NaCl) in distilled water is prepared. Certain standards of purity are demanded in the salt, and the distilled water has to be heated to drive out any carbon dioxide. This solution is heated to around 95° F.; it is filtered and then sprayed into the salt spray cabinet. The cabinet is completely enclosed and maintained at a specified temperature and humidity.

The temperature range is from 90° F. to 96° F. A temperature of 92° F. seems to be widely acceptable. The humidity, after release of the fog into the cabinet, must be between 95% and 98%. Staying within these ranges, it is essential that a constant temperature and humidity be maintained at all times. Even a slight variation may have a decided effect on the results.

The coating to be tested is usually on one or more panels; these panels must be so positioned that no drops

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of condensed liquid fall on a test panel. The condensed liquid is collected and discarded; it is not reused.

It is not my purpose to give this test in detail, but rather to assay just what the findings can mean to you. The panels may or may not be scored with a sharp point before testing. That will depend on the specifications. Scoring the panel makes for a tougher test. After a specified interval—anywhere from 150 hours or more—the panel is removed, washed and inspected for whatever characteristic or film failure is called for. It may be film breakdown, loss of color or luster or something else. That will depend on what the test is expected to reveal.

As a comparative test between two or more materials, one of the materials may be taken as a standard or norm. All of the samples are applied and exposed to the same conditions at the same time, thus assuring identical conditions. After such a test you usually find that one material is equal to or better or less desirable than one of the others; and it might be advisable that equal, longer or shorter service exposures should be made.

It has been observed that identical samples tested at different times, under presumably the same conditions, do not prove out the same. This is probably due to several variables involved. The temperature, humidity and concentration of the solution are automatically controlled; the test runs for several days and possibly the automatic features do not work exactly the

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same every time. As I said before, a difference in the humidity has its effect, and a change in temperature has a definite effect on the results.

As to how long an organic coating will last under certain service conditions is a question. Many times I have tried to get the laboratory chemists to say how long a tested material could be expected to hold up in service, and invariably they said that my guess was as good as theirs. At one time they did say that 100 hours should equal six months outside, but they hastened to qualify this statement by adding "right here" (San Francisco area). Probably it would not hold true in some locality, such as the midwest, the south or the eastern seaboard. The lab. chemists surely did hedge. So you can see that any absolute correlation of hours in a salt spray cabinet with a subsequent service exposure is difficult—and it may be impossible.

A specification for a red oxide would probably call for 144 hours, which would mean that a material that could withstand a test of 150 hours would be satisfactory. It is of interest that this test is worthless on zinc chromates. Usually these materials pass this test with flying colors, but in actual weather exposure (with no top coat) you may have a film failure in six months or so. There is a good chemical reason for this which I will not go into here. Do not rely on a salt spray test for zinc chromates. I have been told that for most other paints the test is quite successful, within the limits stated above.—*C. R. Brown.*

For more data, circle 200 on colored card.

"Cheat" on the Finish? You Cheat Yourself

SOMETIMES in the course of meeting industrial finish users of all sorts—that is, department heads in a manufacturing plant, paint sprayers, job finishers, etc.—we find situations constantly arise which tend to tax the frustration resistance index of both the paint salesman and the paint chemist.

Let us take an instance where a salesman calls on a finisher. Whether it is a job finisher or finishing foreman is of no consequence here. Certain requirements are outlined, such as conveyor speed, method of spraying, and the chemical resistance required in the finished film. In many cases it may be that the conveyor speed is too high—so much so that no adequate curing or baking can be obtained and still give proper chemical resistance.

The chemist in the paint lab has a difficult time finding a material that will give any cure in such a short time. Finally he arrives at what could be a suitable cure if the conveyor speed is slowed down just a little. The finisher, in order to get a satisfactory product, agrees to slow his conveyor to the speed indicated.

A laboratory sample is now prepared and the paint salesman brings it over to the finisher for a trial application and evaluation. The parts to be coated are carefully degreased and then sprayed and baked in accordance with the chemist's instructions. The parts so coated meet

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This customer-installed American "Cable-Way" conveyor carries warm-air furnace parts thru a 600° burn-off oven, an electrostatic spray, a 325° bake oven, and finally to assembly bays. Total length, 1200 feet.

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all the requirements of the finisher.

The first step then is to place an order for a production batch of the enamel. Usually, if the salesman is conscientious enough, he will try to be present when the first material is used. Should this be satisfactory he leaves the finisher and goes about calling on his other accounts.

About two or three days may elapse when suddenly the salesman receives a hurried call from that finisher for whom he had a special material formulated. The coating is soft, it peels, and it does not protect steel surfaces against rust. It is amazing how any paint material could go so bad in such a short time.

The salesman arrives to receive in full force the disappointment and anger of the finisher. First step in the investigation is an examination of the coated parts. This merely corroborates the findings of the finisher but serves as a clue for the salesman. Where the coating is peeling there are signs of oil and grease. Rust spots and corrosion appear in areas of thin paint film and holidays. There are signs of some orange peel and blisters.

Next step is to check the actual production setup. Here Mr. Salesman now finds that degreasing has been minimized, the enamel has been thinned excessively, and the conveyor speed has been increased. This was done immediately after the salesman had left, after the initial trial.

We often wonder about the workings of the finish user's mind. Here he had committed the three worst crimes in finishing—poor degreasing, too thin paint coverage, and undercuring. What could he possibly hope to gain? By attempting to fool the salesman who had gone to so much trouble to get the finish line going in the right way with the right material, who was he actually fooling?

Unfortunately, this situation occurs throughout the finish industry. There are definite principles in finishing and these cannot be safely side tracked. Regardless of what he may think, the finish user cannot fool the paint nor the paint salesman. He can only succeed in cheating himself which, before long, will probably prove to be a costly experience.—*Len Simmons.*

Salesmen's Phone Calls

DO YOU salesmen keep in close touch with your office? How many of you check with your telephone operator, not only from out in the territory but as soon as you hit the office? Believe me, it pays off. The telephone is your contact with your customer; and receiving or not receiving your calls can make or break you. If the operator knows that you are eager and interested she will see to it that you get your calls at once. Telephone operators are human; they like the attention which costs so little but which means so much. If you show interest in your calls, you will get them. In over 30 years I missed only two calls.—*C.R.Brown.*

Drum Mixing Equipment

A new 12-page bulletin (8½x11-in. two colors) describes and illustrates the complete line of Drum Mixing Equipment offered by the Process Equipment Division of U. S. Stoneware Co., Akron 9, Ohio.

The new Bulletin DM-290 highlights an expanded line of five standard sizes of "U. S." Heavy-Duty Fiber Drum Tumblers now available with new design features such as quick-release drum holders, floor-level loading and built-in drum extenders.

The literature shows pictures and specifications for Drum Rollers, Conical Blenders, Tumblemixers, "Rocker-Roll" Mixers and other special units and accessories for performing all types of drum mixing and blending operations. A complete description of each unit is given along with recommended applications. Copies of Bulletin DM-290 are free.

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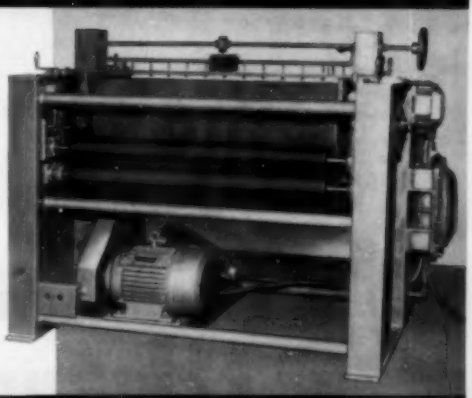

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THE HIGHLY accurate, compact, completely automatic missile guidance radar system used by the U. S. Navy was developed and is manufactured by the Sperry Gyroscope Co., of Great Neck, N. Y. This radar system is used to guide a missile to a definite target. From the time the target is designated to the radar through the time the radar goes into automatic tracking, the radar operator's sole function is to act as an observer. The system can be operated manually or automatically.

All of the equipment used in this radar system is given a prescribed protective coating. The equipment installed below deck is subjected only to salt atmosphere and perhaps some condensation. The radar antenna housing, supporting base and other mechanical apparatus mounted on the deck of the ship presents the real problem in inhibiting corrosion. This equipment must withstand the original salt spray test, the extreme cold of polar regions, the heat and humidity of the tropics—truly a real test for any industrial finish.

Most of the above-deck equipment consists of aluminum castings. These castings are anodized in a tank system to promote adhesion of the finish coats, and to improve corrosion resistance. All rough places are then knife glazed with an air-dry putty. After about two hours, the glazed surfaces are lightly sanded and certain areas are masked with tape

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to protect them from any finish coats.

All exposed surfaces are given a thin spray coat of zinc chromate. The maximum film thickness of this coat is ½-mil. After an air drying period of about 15 minutes the parts are inspected and any remaining rough areas are knife glazed, allowed to air dry and lightly sanded. After the surface is well cleaned by being "blown off" with compressed air and "tack ragged," a lacquer base primer-surfacer is sprayed on. This coat is allowed to air dry for two hours.

The equipment is now ready for the first top coat of 45% solids, modified alkyd-resin-base enamel. After a flash-off period of ten minutes this coat is baked in a batch type, electric convection oven for one hour at 270° F. A cooling period of 30 minutes follows. Then a second top coat of the same enamel is sprayed on and baked for the same length of time and at the same temperature.

This system produces a minimum thickness of 2 mils. The resulting finish is tough and enduring enough to withstand any temperature, moisture and salt water conditions the unit is apt to encounter.—*P. C. B.*

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Facts Back Corrosion Problem; Bad Steel

THE ARTICLE "Steel Cabinet Corrosion Problem Solved," which appeared on pages 90 and 94 of Oct. 1959 issue, was meant to report an individual instance where, for some unexplained reason, corrosion occurred "where none should oughta be." It happened and then disappeared after the steel supplier was notified. In order to show finishers that individual cases arise which ordinarily are not considered, this incident was reported.

Since the appearance of that article in *Industrial Finishing*, the writer has received letters and inquiries which indicate that this particular problem was not an isolated instance but rather a widespread source of annoyance among users of sheet steel.

The steel supplier reported that some nickel-chromium had been rolled into the cold-rolled steel, but this was only because the labor situation was unclarified at the time, and emergency conditions prevailed.

Shortly thereafter it was stated that lead contamination deposited on the steel surface could also cause the same problem, and probably would cause accelerated corrosion.

Subsequent to the article in the Oct. issue of *Industrial Finishing*, Mr. George W. Grossman, Jr., President of Q-Panel Co., presented a paper at the 37th Annual Meeting of the Federation of Paint & Varnish

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Production Clubs in Atlantic City, N. J., dealing with the "Influence of Cold Rolled Steel Surfaces on paint Performance and Paint Testing." From this paper it was made plain that this (what we have just discussed) is a common problem.

Research at General Motors had shown that surface contamination was very harmful and caused early failure of paint systems. At that time the nature and identity of the contaminents could not be determined.

In this paper, which was reprinted in the Dec. 1959 issue of the Official Digest, Mr. Grossman presented experimental data to show that carbon was the contaminent, developed in many cases by the breakdown of oils during annealing. His reasoning was based on the formation of a fine grained phosphate deposit under the contaminent film. In addition, a panel wiped with clean cotton developed a considerable amount of carbon soot.

In the instance reported in *Industrial Finishing*, however, it was determined that no phosphate coating was developed in those areas which corroded. This then would seem to indicate that in this particular case carbon was not the guilty element.

The point here is not to discuss the possible contaminents; that could be the subject of more comprehensive research. However, the object here is to point out that surface contamination on the base metal is a widespread problem; in fact, far more so than we originally realized. It would be well therefore for finishers of parts made of sheet steel to note these possibilities. It may not be the cleaning, the phosphate treatment, nor the paint that is causing failures in your finish. It could be contaminated steel.

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Why We Need Accurate Air Regulation

ON MOST AUTOMATIC spraying machines compressed air is used for at least two or three separate functions. First, unless pumps are used, material is forced to the applicators by using the familiar pressure pot. Now pressure pots do not really use any appreciable amount of air. Compressed air is merely made use of to maintain a constant pressure on the material, forcing it to flow at the desired rate. And, since the machine cannot compensate as readily to a change in fluid pressure as a human can, it is vital that the fluid pressure be dependable and constant. Consequently when old pressure pots are assigned to automatic duty, it is wise to re-fit them with regulators and gauges of the best quality.

The second—and by far the largest consumer of compressed air on automatic paint spraying machines — is the atomizing air. This air is always regulated; pressures must be accurately controlled at anywhere between 25 and 75-lbs. per square inch. Regulators, like everything else, wear out; and this is where many people make a mistake.

There are, on the market, many regulators that are entirely unsuited for spray guns. At 50-lbs. pressure a spray gun may consume as much as 15-cu.ft. per minute—and remain open for long periods of time on an automatic machine. Many regulators, not designed for this purpose, will chatter under

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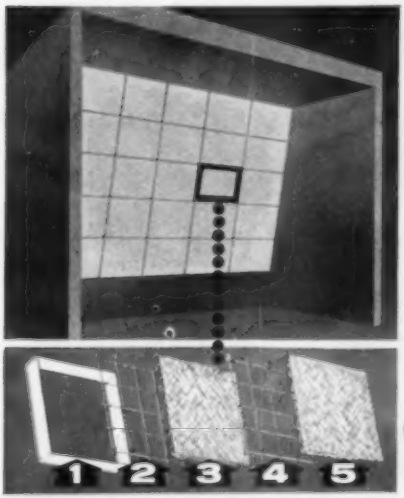
such a strain. Worse yet, if air passages are too small or contorted, the gun may be starved. So if one or more regulators need replacement, buy air regulators that are of adequate size and that are designed for the job.

Finally, air is often the actuating means for triggering the flow of paint, air pistons being the most common. Like the pressure-pot, an air cylinder does not consume a great quantity of air unless it is constantly cycling. Unlike the air pressure on a pressure pot, the operating pressure does not have to be exceptionally accurate. This leeway has encouraged some operators to adopt another bad practice—operating the pistons on line pressure, without regulation.

Line pressure may vary from less than 80-lbs. to more than 150-lbs. in many plants. This is far more than the suggested operating pressure of any spray gun. Most spray guns have a recommended minimum pressure because the air cylinder must open them. However, since a return spring does the closing, an exceptionally high pressure will make the closing sluggish, due to the large amount of air that must be exhausted. Conversely, low pressure will make for sluggish opening—and too violent closing. There is a balance at which the guns will perform smoothly and promptly.

On an automatic machine, accurate triggering is a must for good work. The added wear and tear can also become a serious problem. Accurate regulation of compressed air can be a good investment.—*G. A. C.*

In one recent year, 687 companies spent over 4% of their net sales on maintenance. Such figures make it easy to see the important part that your plant maintenance costs play in profits.



A Paint Arrestor module consists of a Holding Frame (1), two Snap-in Grids (2 and 4), two Paint Arrestors (3 and 5). Loaded Paint Arrestors are simply replaced as necessary. And, they're also ideal for air-borne ink, mist, dye, frit, etc.

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Service—Does It Solve The Customer's Problem?

ALMOST any large account that involves paint or the equipment for handling it can often hinge on the service behind it. Few business men will contract to spend a large amount of money without, at least, a tacit assurance that service will be rendered when needed. However, as many have learned by hard experience, service comes in many kinds of packages.

Are the service men really capable? If the first man fails to correct the trouble, are more experienced men available? Are they only experienced in making the material or building the product, or have they actually studied its performance and followed it in the field?

There are many true stories about service men who stayed with accounts, practically living with them night and day until the last vestige of trouble with a new product became a thing of the past. The same is true of many salesmen. Both they and their companies (who foot the bill) deserve the success this policy usually produces.

However, there is another type of service with which we are all familiar. We might call it, 'Hit and Run' service; in again, out again service; or even wind-bag service.

A customer, who may have bought a $25,000 piece of equipment or a truck load of new paint, calls to complain about some difficulty. Instead of carefully listening to every detail (these boys like to dominate a conver-

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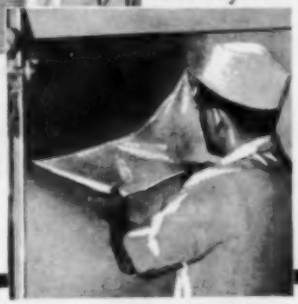

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sation), Mr. Wind Bag quickly cuts in and delivers an arm-chair lecture on how to correct it. After several telephone calls, he decides to give the customer a break and take care of it personally. He books a flight for the town 500 miles away, also a return flight starting about an hour after arrival, and keeps the taxi waiting for him. He rushes in, gives everyone a jovial greeting, takes a fast look at the evidence of trouble and issues some "machine gun" instructions that nobody understands. Then, before anyone can realize it, he disappears.

Back home he tells the boss, "Man, did I have trouble with that account. But I finally showed them what was wrong." This is usually followed by some observations about the stupidity of the customer's employees, thus leaving an alibi for future complaints.

Sometimes, either the trouble disappears, or the customer's "dumb help" solve it, or even one or two of the service man's suggestions do help. So, maybe the boss will begin to regard him as a good service man; "He sure can get to the trouble quickly!"

However, most of us prefer the unhurried call of a quiet man of poise and confidence who knows his subject forward and backward. He removes his coat and rolls up his sleeves if necessary, gets to the heart of the trouble and stays with the job until the problem is not just ameliorated, but is solved completely to everyone's satisfaction.—*G. C.*

Barrett Appoints Sales People

Four new sales representatives to serve areas in the Midwest and West Coast have been appointed by The Leon J. Barrett Co., Worcester, Mass. The company manufactures centrifugal oil extractors, washers, dryers, washer-dryers, galvanizers, breakers, enamelers, impregnators and oil recovery and reconditioning systems.

REPRINTS AVAILABLE

Price, 10 cents per copy.

"Color Variation in Industrial Finishes"
"Film Applicators"
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"What Makes Our Finishing Cost So High?"
"Abrasives, Their Use in Surface Preparation"
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"Finishing Wood Turnings in a Tumble Barrel"
"What's the Big Plus Value in Selling Finishes?"
"Paint Users' Tests; Be Fair; Get Results"
"A Small Paint Laboratory for the Small Paint User"
"Practical Finishing Systems for Magnesium"
"Spray Problems With Hot Lacquers"
"Stains and Their Use in Wood Finishing"
"Cleaning and Conditioning Metal Surfaces for Coatings"
"Applied Decorative Effects to Molded Plastics"
"Preparation of Particle Board for Painting or Finishing"

Industrial Finishing Magazine
1142 N. Meridian St., Indianapolis 4, Ind.

Airless Spray Painting Speeds Up Production

THE Corsicana Grader & Machine Co. of Corsicana, Texas, planned and built a new plant after 40 years of successful growth in the manufacture of farm machinery. The company manufactures rotary cutters and a full line of related farm equipment. All of this equipment is painted for protection and decoration.

In the old plant overspray loss with conventional air spray guns was evident all over the spray room. This required maintenance time to keep the place clean.

Painting rotary cutter covers with airless spray painting equipment. Photograph, courtesy of Spee-Flo Company.

When the new plant was being planned the management became interested in facilities that would offer some new economies and greater cleanliness in the painting department. One firm offered HydraAirless spray equipment on the promise that it would effect a saving of at least 30% in the paint materials used and 25% in the application time. Accordingly this equipment was installed. Mr. Byrd, president of the Corsicana company, declares that the painting is now done 40% to 60% faster, the paint dries in less time, the savings in paint materials used are estimated at 30%, and maintenance required at the spray booth is greatly reduced.

Further, it is declared that the new airless spray painting setup gives excellent atomization and produces a smooth uniform coating on the company's products.

The paint line at Corsicana Grader & Machine Co. is conveyorized for the prime and color coat line. Paint volume, with the airless is about 25 gallons of top coat material per day. This installation has been in service for one year.

Every company needs bright young men it can mold and train for heavy responsibility.

Special Coatings Bulletin

A full color brochure describing how today's special materials can be applied as thin film coatings to solve product and production problems, is now available from the Industrial Coatings Division of National Glaco Chemical Corp., a subsidiary of Ekco Products Co.

This 12-page booklet contains information on the properties of fluorocarbon coatings, silicones, epoxy resins and other coatings. Among these properties are: chemical and corrosion resistance, wide-range temperature stability and electrical qualities, as well as dry lubrication and anti-stick characteristics.

Copies of the brochure may be obtained by writing to: Industrial Coatings Div'n., National Glaco Chemical Corp., 1949 N. Cicero Ave., Chicago 39, Illinois.

Bob Jaffe, Sales Rep. For Adelphia Paint & Color

Bob Jaffe, long active in the paint field, has been appointed Sales Representative for Adelphi Paint & Color Works, Inc. of Ozone Park, N. Y., and its Baer Bros. Division, in a new enlarged New England territory.

Mr. Jaffe, working with Mr. Dave Gollender, will service both Trade Sales and Industrial accounts throughout the new enlarged region.

Does Thinning Give You More Film Material?

IN THE COURSE of his day's work in the industrial finishing industry, a salesman of lacquers and enamels meets a variety of people. Naturally many of these are foremen or superintendents of finishing—and a number of them, some representatives will tell you, are an exasperating lot.

Much has been printed and said about the non-volatile or solids content in a coating material. Again we are reminded that only the film, or non-volatile portion of coating material, remains after the volatile part has evaporated. The percent solids is a measure of the amount of film that a given material is capable of forming. If the film thickness remains the same, a material of 40% solids content will give almost twice as much coverage in square feet as a paint with only 20% non-volatile content, regardless of the viscosity. It is possible for the 20% material to have a higher viscosity than the 40% product.

Recently I had occasion to hear a salesman attempt to explain solids and its meaning to a finishing foreman. He was showing that his product had twice the solids of the competing enamel, at only a 20% increase in price. He amply demonstrated that he could get more mileage from each gallon of his product. But when he had completed his demonstration and his sales talk about this material, the foreman turned to him and asked, "Why should I buy your material when it

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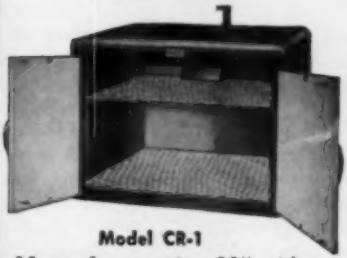

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5600 has excellent cold check resistance. It produces a finish of exceptional paleness and color retention quality. Will not ring from alcohol, water or hot dishes. Highly resistant to scuffing, scratching.

5600 has been fully tested. It has the time and money saving features you demand for production line economy and superior finished results.

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costs more than the paint I'm using?" Well, at this point the salesman threw up his hands and walked out.

Even though he could have painted more products with the same number of gallons of the new material, the only thing bothering Mr. Foreman was that *the material's initial cost was more.* The fact that the new material was actually more economical was not even considered. It seemed like an intangible thing which the foreman couldn't or wouldn't grasp.

Another incident occurred recently when a salesman of hot-spray lacquers and equipment attempted to interest a foreman of finishing in the value of this new procedure. He discussed solids content and the economics and build characteristics of spraying higher solids material. When the representative had completed his talk, this particular foreman declared: "What good is hot spray? I can't thin the lacquer. Look how much more I get when I thin a cold lacquer 50/50, that is one part of thinner to one part of lacquer. In other words I'm getting two gallons for every gallon of lacquer I buy."

Naturally some of these arguments are based on what could seem to be a true observation. Actually it is an illusion. Sure, it seems like thinning gives two gallons instead of one, but what good is an extra gallon that evaporated away into thin air.

Fortunately more finishing foremen are sufficiently informed these days so that the "thinning illusion" is known for what it really is. However, it is unfortunate that too many newcomers are being indoctrinated into the industrial finishing field with misconceived notions. Once these basic ideas have taken hold, it is difficult to break them. To these neophyte finishers (we've given up on the old ones) we can only state that ignorance may be bliss, but you may not be happy too long.—*N. E. S.*

Coatings That Resist Chemical Action

MANY PRODUCTS require the protection of a chemically resistant coating. One example that comes to mind is the lining of drums and shipping containers. Most of these coating materials are pigmented because the opaqueness of the pigment resists ultraviolet radiation. This is not a factor in drum linings, but pigment in the film helps to prevent other forms of energy from aiding in destroying the film.

An interesting test was conducted. Three vehicles, recognized as being highly chemical resistant, were selected. These vehicles were applied on test panels to produce a dry film thickness of 1.2-mils. Then titanium dioxide was dispersed in these same vehicles to produce a material of 12% solids; these pigmented coatings were applied to test panels to produce a dry film thickness of 1.2 mils.

All of the test samples were subjected to a standard ASTM salt spray test. The panels that had been coated with the clear vehicles showed evidence of failure beginning at about 48 hours, and rapid deterioration after 200 hours. All panels coated with the pigmented materials showed evidence of failure beginning at 338 hours. After 500 hours, all of these panels were removed. The pigmented finish, after 500 hours of salt spray testing, was in better condition than the clear coated panels after 200 hours of salt spray.

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. . . **OR get Adelphi's price** on a "Twin" to the paint product you now use. And don't fail to ask for details on Adelphi's "Satisfaction Guaranteed" Plan. For immediate attention contact the Director of our Industrial Division.

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Offering full laboratory control, sample matching, prompt deliveries, *Adelphi and its Baer Bros. Division have been specialists in Industrial Finishes for over half a century.

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Test data such as this cannot be passed over lightly. However, it should not be construed that when you use titanium dioxide as a pigment in chemically resistant vehicles, you have a cure-all for all chemical corrosion problems. Only the formulator is able to determine what is the best vehicle and pigment to be used for specific products that may be subjected to definite corrosive conditions. Give your supplier all of the facts.

Pre-Paint Treatment For New Alloy Metals

THE JET AGE or space age has produced a wonderful new assortment of metals and alloys that were not with us a few years back. As each new material has appeared, it has presented problems for the finishing and product painting departments of modern industry. Usually these problems have required the chemical industry to devise methods of treating the surfaces of the alloys before they could be successfully painted. And, the chemical industry has responded very well. It has come up with a long list of formulations which are now part of hundreds of company specifications.

Originally developed by large firms and certain Governmental agencies, these treatments were once of only academic interest to the job finisher. However, these surface treatments have become widely recognized as being a necessity before any finish can be safely applied to many alloys. Now it is a very small operator indeed who has not had to face the deci-

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sion of whether to use or turn down a sizable piece of business.

If a fabricator of these new metals wishes to job out the painting or finishing, only a small percentage of the jobbers will refuse the work. The great majority will accept the order. However, some of them will job out the treatment phase of the work to others who have had the foresight to keep informed and equipped for all types of metal treating.

Metal treating is often the most profitable part of a finishing operation. Parts can be handled en mass; the prices charged are usually by the pound, and the cost of the needed chemicals is trifling. Usually the treatment is not at all complicated. Often it involves only a simple immersion for a prescribed length of time, followed by rinsing. Most of the treating solutions are stable and can be stored in jugs if necessary. Many of them work at room temperature. Best of all, there are several formulations that are acceptable treatment for a number of different metals, thus reducing inventory requirements.

The job finisher is truly passing up some terrific dividends if he fails to investigate the potential of every new metal treatment.—*Geo. Conrad.*

Fluorescent Enamel Book Shows Large Samples in Colors

A descriptive folder on high-visibility "Pyralux" fluorescent enamel for safety and decorative painting of vehicles, aircraft and signs is now available.

The four catalog-style pages are printed in the hyperintense fluorescent colors —vermillion, yellow, orange, and red— which possess four times the daylight brightness of conventional hues. Designs for dramatic identification of trucks and buses are shown, as well as a description of how the new type enamel serves its purpose. Directions for use are included.

Copies may be obtained by writing Du Pont Co., AP-63, Wilmington 98, Dela.

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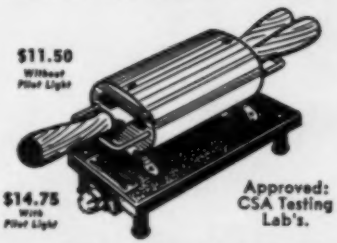
No String Tied To This—

If You Use OP-AL



Patching Knife Heater

STANDARD FOR OVER 25 YEARS

Sold By All Leading Jobbers

OPAL THE OP-AL ELECTRIC AND MANUFACTURING COMPANY
3333 MARTINDALE AVE.
INDIANAPOLIS 5, INDIANA

For more data, circle 239 on colored card.

Abrasives to Smooth Metal for Painting

ABRASIVES play a big part in preparing metal surfaces for finishing or painting. Abrasive wheels and power-driven reciprocating blocks are often used for preliminary smoothing, to be followed by fine sanding with coated abrasive belts and flexible discs. Fine abrasives are also used for sanding prime coats and intermediate coats in both dry and wet sanding operations. Each type of abrasive has definite characteristics and each one is especially adapted to specific classes of work.

Paper, cloth and special backings are available. Paper backings can be obtained in several different weights and thicknesses. The weights range from A (40-lbs. per ream) to E (130-lbs. per ream). Multiple ply paper backings are used for power driven sanding machines whereas single ply backing is generally used for hand sanding.

Cloth backing comes in two weights — jeans and drills. Jeans are used as backing for aluminum oxide abrasive in grit size No. 80 and finer. Drills, a heavier and stronger cloth, is generally used for power-driven belts and discs.

For extremely severe sanding operations, a combination of strong paper, light weight cloth and glue is used. For use on portable disc sanders, a combination of drill and fiber is used because it will stand up under high speeds and exceptional strains.

Aluminum oxide is a manufactured

EPOXY
RESIN COATING
the HARDEST
TOUGHEST
TIGHTEST finish you can use

If you need a coating that will look better — longer — under any conditions of impact, abrasion or chemical attack . . . one that holds tight to just about any solid surface you can think of . . . try Poly-Ep.

Clear or colors — from pints to drums — we have it in stock or will mix to your requirements.

WRITE, CALL OR WIRE DEPT. D4,

D. J. PETERSON COMPANY
P. O. BOX 181 SHEBOYGAN, WIS
SPECIALISTS IN EPOXY RESIN COATINGS

For more data, circle 213 on colored card.

abrasive, brown in color, and is well adapted for use on alloy steel, high carbon steel and bronze. Silicon carbide is also a manufactured abrasive, blue black in color, and is generally used on cast iron, aluminum, brass, copper, glass and plastics. Emery is a natural abrasive, black in color and is suited to polishing various metals. A vulcanized fiber backing is available for the really tough disc sanding jobs.

Abrasive belts are being used in many instances instead of the more rigid, unyielding abrasive wheels. It would be well to check from time to time with the sales-service representative of your supplier to learn if any improvement can be made in your use of abrasives. Information could save you some money.—*C. B. L.*

Hand Sanding Irregular Surfaces

WHEN SANDING or rubbing of any kind is required on an article that has some complicated areas, the workman is often tempted to begin by working on the details first. The foremen in most plants that have large amounts of sanding to be done, have recognized this as bad practice. Sometimes it can add from 25% to 100% to the time required, depending on the shape and size of the work.

A better method is to work out all of the main areas first. Do the big sections first; when these are done, you will often find that much of the complex area is partially or entirely finished. This is the result of sanding into corners, or over protuberances or shallows. The abrasive merely did some extra work, while attention was being centered on the main parts. Sometimes only a few strokes or twists will finish the part.—*Mack.*

START SAVING MONEY

Try Our **Black and Gray Enamels**

Only **$1.15** To **$1.25** per gallon drums only

Our Paint

1. Contains high solids synthetic alkyds and melamines
2. Available either fast airdry or baking
3. Adaptable for spraying, dipping, roller and flow coating
4. Gas and oil resistant
5. passes government and automotive salt spray tests
6. Free samples upon request

GOTTLIEB CHEMICAL CO.

100 Woodmere, Detroit 9, Mich.

For more data, circle 240 on colored card.

SPRAY MASKS
REDUCE YOUR MASKING COSTS BY USING INEXPENSIVE, HEAT RESISTANT
KWIKY-DOTS
A raised edge is automatically provided on each disc for easy grasping. Connected strings of several discs may be removed for fast application. Stock Size: ⅛" up.
NARROW MASKING TAPES
Precision cut to any size from 1/32" up. In standard 60 yd. rolls.
Send for Literature and Samples
BY-BUK COMPANY
4314 W. Pico Blvd., Los Angeles 19, Cal.

For more data, circle 241 on colored card.

How to Keep A Customer Who Owes You

CREDIT is the life-blood of business. It is a rare business man who can go very long without either needing it or having to extend it. Yet credit can do some strange things to people, to businesses, and to friendship. Some accept it so blythely and then go through agonies trying to repay; others accept it only in emergencies, and then cannot be at peace until it is paid.

In business, credit can lead to many complications. Some people are very sensitive to even the most diplomatic or tactful innuendo of a past due notice. Others either procrastinate or are actually too busy to pay a bill until they are reminded for the 4th or 5th time.

The worst factor involved though, is when a good customer, owing a lot of money, stops buying. This often happens in the paint and finishing industry. You know the customer is still in business, so where is he getting what he formerly bought from you?

One finisher, who had built up a very prosperous business, told an association meeting how he had handled the problem.

As soon as he was positive that the customer was no longer bringing him the business, he visited him personally, keeping after him until he found him. Then he would explain that he was not interested in the past due account, but only in keeping a valued customer. At this point, he would get the debtor to

PROBLEM:

Metal cleaning—find a nozzle that resists corrosive liquids used in the cleaning and rinsing of metals.

SOLUTION:

Delavan PVC Type WF-P nozzle

The new WF-P nozzle is made of Polyvinyl Chloride. PVC offers excellent resistance to acids, alkalies, salt solutions and alcohols and provides for high operating pressures in temperatures up to 180° F. The WF-P delivers a flat, hard-hitting, uniformly distributed spray pattern. Its exclusive orifice design and tapered inlet assures maximum resistance to clogging. Its hex-shaped body permits easy installation and removal with standard or power socket wrenches. A wide selection of capacities, spray angles and pipe sizes is available.

If the right nozzle will improve your metal cleaning operations, there's a Delavan nozzle that will do it better.

Write for Catalog 33.

DELAVAN Manufacturing Company

WEST DES MOINES • IOWA

For more data, circle 214 on colored card.

admit that in extending him credit, he had done him a favor. Getting a "Yes" on this, he would ask, "Now, will you do me a favor?". Naturally, the debtor would be only too happy to oblige.

Then Mr. Finisher would point out that someone had to do the work, so why not give it to his old creditor on a C.O.D. basis? On his part, the creditor promised never to ask for the old bill. Of course, any time the debtor had a few dollars to pay toward it, it would be welcomed sincerely. But the creditor would never remind the debtor of it. This finisher claimed that he had almost every customer who had ever given him business, and that only two had ever failed to pay!—*Ken MacKenzie.*

Here's a New Color Card of Industrial Finishes

From United Lacquer Mfg. Corp. comes an excellent color card of industrial finishes. Shown are some 64 shades available in lacquers, synthetics, vinyls, and specialty finishes in a complete scale of lusters at six levels, whereby selective determination of sheen is readily made.

Finishes included are wrinkles, metallics, pearlized Hammermark, Uniloids, metallic Hammermark, Golden "Veil" Lacquer, Multakolor, stain, crystal lacquers, crackle lacquers, and clear lacquers. Detailed descriptions of each finish, plus many others too numerous to illustrate, are also contained on the card.

United has included in the swatches 1960 and 1961 House & Garden magazine color shades, as requested by many industrial firms. United has been authorized as a House & Garden paint manufacturer, having colors formally approved by the editors. For your copy of this unique folder, write to United Lacquer Mfg. Corp., 1001 W. Elizabeth Ave., Linden, New Jersey.

Wolverine Finishes Advances Men to Higher Positions

Wolverine Finishes Corp., manufacturer of wood furniture finishes, with plants in Grand Rapids, Mich., and Morganton, N. C., announces the following promotions:

Warren Rosendall has been made General Sales Manager.

Bill Craft, who was transferred from the Morganton Plant, has been promoted to plant manager; he is responsible for all purchasing, manufacturing shipping and accounting functions.

Mel Danielson has been made Technical Director with responsibility for the research and development laboratories.

Sherwin-Williams Names Forth to New Post

Leo Forth, Jr., superintendent of technical service at the Los Angeles plant of The Sherwin-Williams Co., has been named project manager of the company's industrial sales division in Cleveland, O. In his new post Mr. Forth will direct new products development for the industrial division, particularly as it relates to product finishing systems.

WOOD GRAINING MACHINES

6-inch to 60-inch printing widths.
Models for every direct-printing application.

KENT ROTARY EQUIPMENT COMPANY

1507 So. Downey Road — **Los Angeles 23, California**
Cable: KENTRO, Los Angeles — **Phone: ANgeles 1-5632**

For more data, circle 215 on colored card.

● SUPPLIES
● MATERIALS
● EQUIPMENT

Hose for Catalyst, Hot Spray, High Pressure; Anti-Static

A new plastic-lined hose used for conveying catalysts and additive materials to the spray gun is one feature of a newly issued condensed catalogue covering hose available from The DeVilbiss Co., Toledo 1, Ohio.

The polyethelene tubing, resistant to the action of chemicals present in catalysts and additive materials, is manufactured by DeVilbiss in its own modern hose plant, as is all the company air and fluid hose.

The complete line of hose includes, in addition to specially lined hose which is solvent and paint resistant, medium and high pressure air hose with smooth and corrugated covers in a variety of sizes. There is also an air hose with a static wire for use where static electricity must be dissipated. All hose is made to unusually close tolerances to assure ease of attaching connections.

Available for a variety of requirements.

In addition to the catalyst hose, the company also manufactures a synthetic rubber resin hose, plastic tubing for spray painting application, and special hoses for carrying petroleum derivatives and for water or water mix materials. It also produces a jacketed hose for use with a paint heater which enables circulation of hot water through the jacket to keep the material at an elevated temperature right up to the spray gun.

The new catalogue also covers all standard hose connections, the quick detachable connections for both air and fluid, and special threaded or quick detachable connections for twin hoses. All available types of air and fluid valves, coupling and adapters are included in the catalogue.

For more data, circle 1 on colored card.

Electrical Insulating Spray Gives High Resistance

High resistance to oil, water, acids and alkalis for electrical equipment is reported for Sprayon No. 601 Red Insulating Varnish-Enamel according to the maker, Industrial Supply Division, Sprayon Products, Inc., Cleveland, Ohio. Packed in a 16-oz. aerosol can, the insulating spray is part of Sprayon's line of 47 maintenance and production aids in self-spraying containers.

Intended for use on new or old stator windings, armatures, coils, com-

mutator end rings, frames and end shields, switchboard parts, bus bars and the like, Sprayon No. 601 Spray penetrates thoroughly and dries quickly to a tough, flexible film with high adhesion characteristics, high arc-resistance and non-tracking.

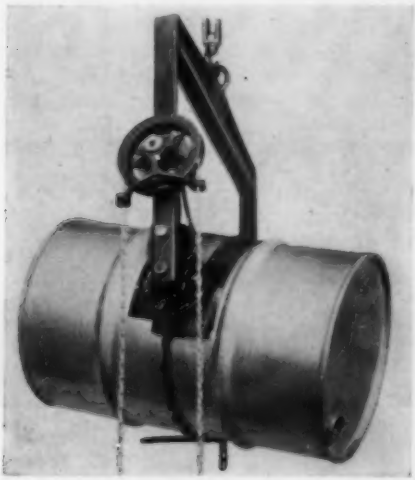
Sprayon No. 601 Spray may be used either as a finishing varnish or a primer and may be baked or air-dried. A free handbook of Sprayon "Aerosols for Industry" is available from Industrial Supply Division, Sprayon Products, Inc., 2075 E. 65th St., Cleveland 3, Ohio.

For more data, circle 2 on colored card.

Hoist Drum and Pour Contents

A new Kontrol-Karrier, Model 185, has been developed by the Morse Mfg. Co., Inc., 727 W. Manlius St., East Syracuse, N. Y. The unit is designed to give controlled pouring at any height or location in the plant, on standard 55-gallon drums.

Just hook the Kontrol-Karrier to a monorail hoist, crane or chain block.



Makes drum handling and pouring easy.

Snap the carrier saddle to a drum and transport it to any location or height you desire.

The tipping of a drum is done by one man on the floor, handling the chain loop which extends down from the carrier.

The Kontrol-Karrier will handle 800-lbs. liquid or 500-lbs. dry loads with safety and ease. Special saddles are available for fiber drums.

For more data, circle 3 on colored card.

Jiggles Cleaning Basket

Did you ever feel the need for an automatic mechanical device for jiggling a basket of metal parts to quickly "kick-off" the clinging liquid after the basket has been lifted from a tank of cleaning fluid?

The Dayton Rogers Mfg. Co., Minneapolis 7, Minn., has developed a new Pneumatic Reciprocating Agitator.

This small portable lightweight unit only needs to be connected to the average shop airline to obtain its driving power.

Loads up to 150-lbs. can be agitated at any desired stroke from 1 to 6-in., and agitating speeds vary, on both up and down strokes, from one to 12 strokes per second. Agitation may be stopped at any time by simple manipulation of the stop lever.

This small unit, for all basket-suspended cleaning purposes, will be available starting June 15, 1960.

For more data, circle 4 on colored card.

New Airless Paint Spray Gun

When paints and other coatings must be kept at elevated temperatures, this new spray gun permits continuous recirculation of liquid to maintain desired viscosity. For liquids containing certain types of suspended solids, continuous recirculation is also desirable to maintain the required distribution of solids.

Identified as the No. 8395-22 HP-SSTC GunJet, the new spray gun is built with a high-volume inlet and outlet, so that liquids can keep recirculating through the system both while the gun is being used and during shut-off periods. Desirable features include highly abrasion resistant tungston carbide valve seat and needle, stainless steel body and cap and Teflon packings. The valve seat is positioned directly behind the orifice tip, so the valve needle, in passing through the valve seat, cleans the valve.

The inlet body is independent of the valve trigger mechanism. Liquids are in contact only with the body, valve needle, valve seat and orifice tip.

For complete information write for Data Sheet 8395 to Spraying Systems Co., 3240 Randolph St., Bellwood, Ill.

For more data, circle 5 on colored card.

Light in weight and easy to control.

Low-Foaming Spray Washing

A new spray washing machine cleaner which provides low foaming action in cleaning all metals has been announced by Frederick Gumm Chemical Co., 538 Forest St., Kearny, N. J.

Called Lo-Foam, the non-caustic compound, which has unusually high emulsifying, penetrating and detergent action, not only produces minimum foaming but also counteracts the foaming action produced by the oil, grease or similar type of contaminants being removed from the metal parts.

For more data, circle 6 on colored card.

HYDROTEK
hyd
FINISHES FOR INDUSTRY
Hydrosol Inc.
Cicero, Illinois
DIVISIONS: THE MAYWOOD CO. Automotive Products PRESSURE CONTAINER CORP. Aerosol Products

Pee-Wee Sprayer for Small Touch-up Work

The Pee-Wee Sprayer sprays any liquid that can be thinned to spraying consistency — lacquers, enamels, paints, solvents, etc. Each can of propellant gas sprays approximately one quart of material, depending on the weight and viscosity of fluid.

The Pee-Wee Sprayer works on the same principle as a large spray gun. The source of pressure is the pressurized filled can which, when empty, can be replaced by a refill. A product of Thome-Mossman Co., 1111 N. Franklin St., Chicago 10, Illinois.

For more data, circle 7 on colored card.

The propellant gas is in a pressurized can.

It Spreads Like Paste and Hardens to Metal

Lab-Metal, a tough versatile metal in easy to use paste form, adheres permanently to metal, wood, plaster, glass or plastic. It can be applied right from the can; no two part mixing or measuring, no heat or special tools are required. Lab-Metal with-

.It is packaged in 1½, 3 and 12-lb cans

stands heat to 350°-F. and when hard can be milled, drilled, tapped or ground.

Lab-Metal can be thinned to paint consistency with Lab-Solvent and

rosol

custom formulated industrial finishes are best . . . . .

For more data, circle 216 on colored card.

brushed or sprayed as a waterproof rustproof protective metal coat. It is valuable as a production filler on metal or wood for casings, patterns and in metal fabricating industries where permanent adhesion is required and where easy application is desirable. It is excellent as a repair material lor leaking pipes and tanks.

Lab-Metal is not affected by salt or fresh water, has excellent acid resistance and is not attacked by alcohols, gasoline petroleum or petroleum solvents. A product of Alvin Products, Inc., 22 Houghton St., Worcester 4, Mass.

For more data, circle 8 on colored card.

Pressure-Type Cleaning Gun

A high velocity spray, pressure-type cleaning gun for use in factories and shops—wherever fast, thorough cleaning and degreasing is necessary—is offered by The DeVilbiss Co., Toledo 1, Ohio.

The new gun will deliver a driving spray to knock off dirt and provide

Sprays cleaning fluid; has adjustable spray.

coarse, hard-hitting drops to penetrate built-up films. It is adjustable for a full range, down to a gentle mist.

The extension nozzle permits spraying into cavities and other hard-to-reach areas. An adjustment on the gun permits a quick change of the amount of material being sprayed. The gun can be used with all common cleaning and degreasing materials.

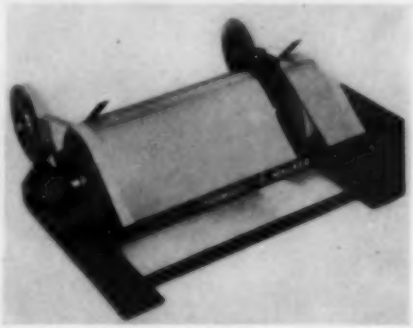
The nozzle and extension tube are of brass, and the gun body is made of aluminum, making it light.

Compressed air is recommended to provide 6½-cu.ft. per minute at 60-psi required for the gun.

For more data, circle 9 on colored card.

Masking Tape and Paper Dispenser by Permacel

Permacel, New Brunswick, N. J., manufacturer of pressure-sensitive tapes, announces the development of a new, compact Masker for use in industrial masking operations in spray and roller painting work.



Peel off masking tape and paper quickly.

Designated the Permacel 10 Portable Masker, the unit has a steel frame with a base area of less than 2-sq.ft. It can accomodate a single 18-in. roll of masking paper or any combination of rolls through 15-in. The Masker can be mounted on a work bench or on the wall.

The addition of a Permacel 101 Masker Conversion Kit enables the user to dispense a double taped apron or two rolls of masking paper from one machine.

For more data, circle 10 on colored card.

For Your Convenience

Use INDUSTRIAL FINISHING magazine's "Reader Service" return cards to obtain further information on products described and illustrated in the "Materials; Supplies; Equipment" section which precedes this page; also to receive further information on what manufacturers have to offer—literature, products, supplies, services, etc., as mentioned on the preceding and following pages.

It's simple and convenient for everyone. Just circle the corresponding numbers on reverse side of card below, print or type in your name and your company's name and address, detach and mail. No postage required.

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Industrial Finishing Magazine
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Indianapolis 4, Ind.

YOU'LL FIND THEM HERE!

For a quick run-down on what's the latest, read all of these items about the new products, equipment and services offered by advertisers in this issue.

Industrial FINISHING

May, 1960, Issue

READER SERVICE DEPARTMENT

Without obligation, please see that we receive further information and manufacturer's literature identified by the numbers circled on this card.

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Name.....*Title*.....
(PLEASE PRINT)

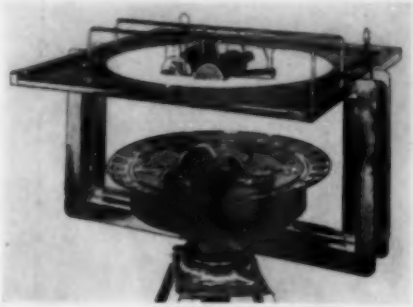
My company's name.....

Street Address.....

City.....*Zone*.....*State*.....

Close-Fit Masking Fixtures

The further development and refinement of vertical fixtures which now makes possible the spray painting of high production color decorations onto many new mass-produced parts, such as elaborate point of purchase displays and TV screen frames, is announced by Conforming Matrix Corp., 331 Toledo Factories Bldg., Toledo 2, Ohio.



One of many spray-mask painting fixtures.

Employing an exclusive square shaft air cylinder, positive registration of the part into the mask is assured. These fixtures revolve 360° on bearings for great ease in painting.

For more data, circle 11 on colored card.

Clear Epoxy Polyester Coating For Aluminum and Brass

A clear epoxy polyester coating designed for protection of both treated and non-treated decorative aluminum products and surfaces, as well as brass and other metals, is now available from John L. Armitage & Co., 245 Thomas St., Newark, N. J. The original luster of the base metal is retained with the use of the coating which has a high degree of mar resistance as well as resistance to burns, cracking and staining.

The flexible epoxy can withstand a ⅛-in. bend. Cigarette stains can be wiped away.

The coating can be applied by either spray or dip. It is baked for 3 to 15 minutes at 350° F.

For more data, circle 12 on colored card.

Color on Color; Multi-Color In Variety of Combinations

"Color on Color" is a multi-color paint product of Titanine, Inc., Union N. J. It gives a one or two speckled color effect on a solid color background and is available in a wide range of color combinations.

"Color on Color" is a plastic coating that is fire retardant, chemical resistant, mar resistant and mist free. Properly sprayed, it does not run or sag. Touch-ups are easy. Gold dust flitters may be added to any of the color combinations. The enamel dries to touch in less than two hours.

For more data, circle 13 on colored card.

Rust Treatment Dries Faster

A new drying agent has been added to "Ospho" metal treatment. In the average application, drying time is reduced to approximately half the 12 hours formerly required.

"Ospho" is applied directly on rusted metal. It chemically changes rust (iron oxide) into iron phosphate, an inert surface which provides an excellent base for regular maintenance paint.

"Ospho" also provides a good bond between new metal and paint. It is available in gallon bottles (in cases of 4), 5-gallon pails and 50-gallon barrels.

For literature and prices, write Rusticide Products Co., 3125 Perkins Ave., Cleveland 14, Ohio.

For more data, circle 14 on colored card.

High Heat Resistant Paint

A high heat resistant paint, which protects steel jigs, fixtures and formed products during brazing and welding operations, is announced by Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio.

Applying Heat-Rem H-170 on torch weld jig.

Known as Heat-Rem H-170 Super, the paint is said to withstand temperatures to 1700°F. It is available in both aluminum and clear vehicles.

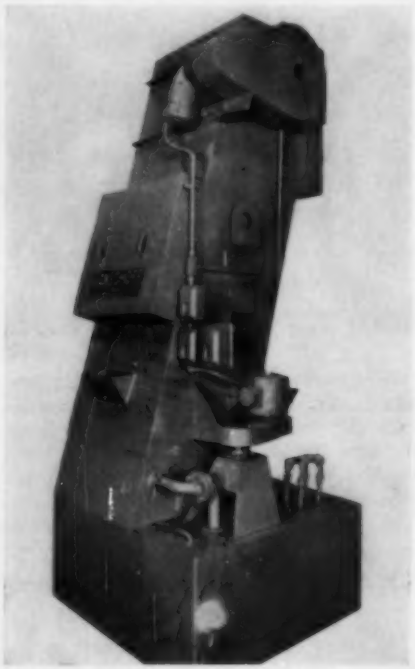
Heat Rem H-170 Super is especially recommended for fine tolerance work. It is claimed to be widely used on torch weld jigs on which rocket engine chambers are formed. In addition to spray application, the paint may be used for dipping or brushing.

For more data, circle 15 on colored card.

Cleans Small Metal Parts

A Ransohoff vertical conveyor-type washing machine, designed for the inter-process cleaning of small stamped and forged parts, washes a 300 to 1500-lb. work load each hour. With its 11-ft. vertical conveyor, only 16-sq.ft. of floor space is required.

A separate conveyor carries the work to the charging hopper. Parts are received a few feet above floor level and are given a thorough spray cleaning as they are conveyed upward to the end of the conveyor where parts are automatically discharged. Parts are discharged at or near ceiling level—or the conveyor may be extended to discharge the work on the floor above, thereby eliminating handling costs.



Conveyor-type, small parts cleaning unit.

The address of N. Ransohoff, Inc., is North 5th St. at Ford Blvd., Hamilton, Ohio.

For more data, circle 16 on colored card.

To solve the problems of others takes experience with human nature and human misery.

What Manufacturers Offer--Literature, Materials, Equipment, Supplies, Services

Please Mark Returned Cards Correctly

Some of the returned cards we receive are not filled in correctly—and we cannot read a few of the hand written names and addresses. Before returning a card, please check to see if it is marked correctly—and legibly, including your name and address. Thank you.—*Editor.*

Water Soluble Baking Enamels bake to a high gloss, marproof finish. Have good color retention and wear resistance. Bake in 30 minutes at 300°F. Can be applied by cold spray, hot spray, dip, electrostatic spray. "Sea-Lac" eliminates fire and explosion risks. Duralac Chemical Corp., 84 Lister Ave., Newark 5, N. J.

For more data, circle 17 on colored card.

Detrex M-10 Scale and Sludge remover is the answer to the phosphate coating industry's maintenance problem. Phosphate scale, hard water scale and insoluble salts can be quickly removed from pipes, inside and out, and from walls and coils within the phosphate zone. This alkaline cleaner dissolves scale and sludge without damaging equipment in any way. Can be used in immersion or spray equipment. Detrex Chemical Industries, Inc., Box 501, Dept. IF-560, Detroit 32, Mich.

For more data, circle 18 on colored card.

Styling Laboratory for the special purpose of developing colors for customers' new designs is a service of Snyder Brothers Co., P. O. Box 631, Toccoa, Georgia. Panels are finished for submission to customers and prospective clients. Complete pieces of furniture can be styled in new colors. Facilities are available for technical sales service, color styling and materials formulated for your particular needs.

For more data, circle 19 on colored card.

Walk-in, Bench and Cabinet type ovens are just three of the 85 standard industrial ovens available from Grieve-Hendry Co., Inc., 1341 N. Elston Ave., Chicago 22, Ill. Literature on ovens for baking finishes, production line heating, etc., available on request.

For more data, circle 20 on colored card.

Black and Gray Enamels can be supplied in either baking or fast air-dry types. Can be applied by spraying, dipping, roller or flow-coating; are gas and oil resistant and pass government and automotive salt spray tests. Synthetic alkyds and melamines available. Free samples on request. Gottlieb Chemical Co., 100 Woodmere, Detroit 9, Mich.

For more data, circle 21 on colored card.

Industrial Spray Nozzle Catalog, fully illustrated, shows industrial spray nozzles, flow charts, spray patterns, spray characteristics and basic engineering data. Time-saving nozzle selection tables are also included. Wm. Steinen Mfg. Co., 39-47 Bruen St., Newark, N. J.

For more data, circle 22 on colored card.

Finishing Materials for beauty protection and durability are offered by Standard-Toch Chemicals, Inc., 2600 Richmond Terrace, Staten Island 3, N. Y.

For more data, circle 23 on colored card.

Natural and Synthetic Pearl finishes in air dry or bake coatings for a variety of products, are offered by Rona Pearl Corp., E. 21st & E. 22nd St., Bayonne, New Jersey. Apply to metal, plastic, wood or glass surfaces.

For more data, circle 24 on colored card.

Hot Airless Spray Painting by Nordson Corp., 55 Jackson St., Amherst, Ohio, can save up to 30% on paint or other coating materials, and on labor too. Less expensive spray booths are needed, clean-up and housekeeping costs are reduced. Bulletin on Nordson Airless is now available.

For more data, circle 25 on colored card.

"Filler-Sealer" by Reliance Varnish Co., Inc., 4730 Crittenden Drive, Louisville 9, Ky., can be applied by knife-coating to fill wood pores, small cracks, veneer glue joints and depressions. Filler-Sealer is formulated for high-speed production and short drying cycles. Provides a smooth surface for succeeding finish coat.

For more data, circle 26 on colored card.

Clear Acetate Butyrate wood lacquer has high cold-check resistance, resistance to staining; glass-like appearance, built-in drying and curing element. 5-gal. at drum price on a money-back guarantee. Lacquer Thinners are also available. Barker Chemical Co., 700 E. 138th St., Chicago 27, Illinois.

For more data, circle 27 on colored card.

"Why Hot Spray," is the title of an informative booklet offered by The Spee-Flo Co., 6614 Harrisburg, Houston 11, Texas. On-the-job demonstrations can show how longer-lasting, better-quality finishes may be obtained. Investigate the benefits of HydraAirless 20 H-Gun.

For more data, circle 28 on colored card.

Gold, Copper and Aluminum are now available in Cres-Lite brilliant, metallic bronze powders. New color card showing the 44 colors now available is free upon request. Special or matched colors can be made. Crescent Bronze Powder Co., 118 W. Illinois St., Chicago 10, Ill.

For more data, circle 29 on colored card.

Zahn Oscicator is the new concept of flow coating. Fewer nozzles, shorter tunnels, smaller pumps and smaller reservoir tanks are required. Combines an oscillating motion with a reciprocal motion to give a flow pattern from 6 or 8 nozzles. George Koch Sons, Inc., P. O. Box 358, Evansville 4, Ind.

For more data, circle 30 on colored card.

"Kwiky-Dots" Masking Discs reduce finishing cost, increase production, and are heat resistant. A raised edge is provided on each disc for easy grasping. Stock sizes are ⅛-in. and up; also narrow masking tape, 1/32-in. in 60-yd. rolls. Pre-cut spray masks, die-cut masks, caps and plugs can be made to specifications. By-Buk Co., 4313 W. Pico Blvd., Los Angeles 19, Calif.

For more data, circle 31 on colored card.

Flock both natural and synthetic, along with research and laboratory facilities, are now available from the Claremont Flock Corp., of Claremont, N. H., formerly known as Claremont Waste Mfg. Company.

For more data, circle 32 on colored card.

Spraying Units, automatic or manual, high-speed and low pressure, are available from Eclipse Air Brush Co., 400 Park Ave., Newark 7, N. J. Automatic coating machines, Auto-Rod, exhaust equipment, dry or waterwash spray booths, and the Spray-Rod, are just a few of the many pieces of equipment available.

For more data, circle 33 on colored card.

"Epoxy" Paint Stripper saves time and money. Will not harm soft metals, is economical, no scrubbing or manual assistance necessary. Excellent for removal of epoxies. Free brochure on request from Beck Equipment Co., 3359 W. 137th St., Cleveland 11, Ohio.

For more data, circle 34 on colored card.

Gas-Tight, Fog-Proof Goggles for use by paint sprayers and workmen in metal cleaning, grinding and polishing departments. Can be worn with any make respirator or mask. Soft, pliable rubber frames give air-tight fit on any shape face. H. S. Cover, South Bend, Indiana.

For more data, circle 35 on colored card.

RECOVER your Paint Overspray

• REPROCESSED in our plant to conform to its original specification, in both physical and chemical properties, paint waste overspray or sludge can be used again in regular production at considerable savings. Our more than 21 years' experience is customers' guarantee of satisfaction.

PRIMERS—WHITES—COLORS—

• Write for complete details!

Mixed color sludges can be converted to primers.

W. C. RICHARDS CO., 3108 W. Vermont St., Blue Island, Ill.
California Plant: 401 Julianna, Anaheim, Cal.

For more data, circle 217 on colored card.

No. 2 Process Electrostatic Hand Gun by Ransburg Electro-Coating Corp., Box 23122, Indianapolis 23, Ind., saves paint because there is no waste. Saves labor and increases production because it is faster due to the "wrap around" nature of electrospray which paints all sides of tubing, rod and wire from one side only. Saves on equipment because no spray booth is necessary; no compressed air for atomization.

For more data, circle 36 on colored card.

Complete Finishing Systems or miscellaneous parts can be installed in your plant. R. C. Mahon Co., engineers can survey your plant and make recommendations on how you can produce your product most effectively and economically. Typical installations are shown in Catalog A1659, available from R. C. Mahon Co., Detroit 34, Michigan.

For more data, circle 37 on colored card.

Unifio Stains are finely dispersed pigment stains which can be applied by spray or brush to close-grained woods such as poplar, gum, maple and birch. Do not requre wiping. Give appearance of a wiping stain; air-dry in one hour. Can be sprayed on hard-to-reach corners without showing white lines. The Lawrence-McFadden Co., Inc., 7430 State Road, Philadelphia 36, Penn.

For more data, circle 38 on colored card.

"Hydrostat Pump" cuts paint costs up to 40%. This portable spray unit puts paint only where you want it, eliminates overspray and bounceback, cuts exhaust requirements, eliminates fire hazards and makes cleanup easier. Illustrated literature available. Stewart-Warner Corp., Dept. AE-50, 1850 Diversey Parkway, Chicago 14, Ill.

For more data, circle 39 on colored card.

"Liquid Envelope" saves time, labor and money. Is non-toxic, won't corrode metal walls or ventilating ducts. Is the original spray booth coating that can be peeled off quickly. Order 5-gallon test sample at drum-lot price. Distributors all over the U. S., or write Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, New Jersey.

For more data, circle 40 on colored card.

Angier Contact Cements for bonding desk, sink and counter-top laminations, honeycomb or sandwich panels, doors or curtain wall construction, are easy to apply and deposit a thinner more uniform film which results in greater mileage with no sacrifice in bond strength. Angier Adhesives are made for your particular needs. Interchemical Corp., Finishes Divn., 224 McWhorter St., Newark 5, N. J.

For more data, circle 41 on colored card.

"Cable-Way" Conveyors are money-savers for metal finishing. Space-saving 45° or 60° vertical dips for painting and degreasing are available. Trolleys are available in 80, 160 and 250-lb. capacities. "Cable-Way" conveyors are low in cost and easy to maintain. Write for Catalog CD-B. The American Mono-Rail Co., 4th & Franklin Sts., Tipp City 6, Ohio.

For more data, circle 42 on colored card.

"U. S. Adjustable Drum Rollers" enable you to mix, blend or tumble materials right in their drums with complete safety. Wheels on these rollers are of conductive Neoprene to eliminate static electricity. Drum rollers available for any round container, a 5-gallon pail to a 55-gallon drum. Units are available in 1, 2, 3, or 4 drum capacities. Complete information on the "U. S." line is available. U. S. Stoneware, Akron 9, Ohio.

For more data, circle 43 on colored card.

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PROTECT EYES AGAINST PAINT SPRAY, dust, fumes, gas, smoke, etc. Can be worn with any make respirator or mask. Soft, pliable rubber frames give air-tight fit an any shape face. A few drops of water on inside of lenses keep fog off by a simple nod or shake of head. Sample $2.00 postpaid! Order today!

H. S. COVER COMPANY, Dept. 510, South Bend 14, Indiana

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Portable Sanders—electric or air driven, by the National-Detroit, Inc., Rockford, Illinois, can be used on wood, metal, plastic, felt, stone and other surfaces. Straight line or orbital action. National sanders produce that smooth surface so essential to a fine finish.

For more data, circle 44 on colored card.

"Poly-Ep" Epoxy Resin Coating has good resistance to impact, abrasion, chemical attack; holds tight to just about any solid surface. Available in clear or colors, from pints to drums. If your color is not in stock, we will mix to your requirements. D. J. Petersen Co., P. O. Box 181, Sheboygan, Wis.

For more data, circle 45 on colored card.

Paint Strainers for straining lacquers, enamels, paints or varnishes. Made of heavy paper stock with cloth insets in coarse, medium, fine and extra fine mesh, 6-in. in diameter. Louis M. Gerson Co., Box 175A, Mattapan, Mass.

For more data, circle 46 on colored card.

New Thermo-setting Acrylic Enamels by Pittsburgh Plate Glass Co., Industrial Finishes Divn., 1 Gateway Center, Pittsburgh, Penna. give eye-appeal and protection to automatic washers and dryers. Have good resistance to abrasion, staining and corrosion. Free booklet on "Duracron" enamel is available.

For more data, circle 47 on colored card.

Mask Washers, automatic painting machines, masks, clamps and fixtures, are a few pre-planned products of Conforming Matrix Corp., 331 Toledo Factories Bldg., Toledo 2, Ohio. Write for brochure or send prints or sample parts, giving production requirements and results desired.

For more data, circle 48 on colored card.

"Remkleen WS" is a cold degreaser for any product. Rinse, spray or dip your product in Remkleen WS and it produces a chemically clean surface that can be coated or processed immediately. No special equipment necessary. 5-gal. can at drum price. R. & E. Martin, Dept. J-O, 2817-21 Helen St., Philadelphia 34, Penna.

For more data, circle 49 on colored card.

"Prox-Peel" Spray Booth Mask eliminates scraping, grease daubing, special reducers or trick equipment. Provides a fast, dependable fireproof film which, when dirty, peels clean in a solid sheet, dirt and all. Ready to use at normal spray gun pressures. Pyroxylin Products, Inc., Chicago 32, Ill., and Paoli, Penna.

For more data, circle 50 on colored card.

"Rustripper" is the universal tank cleaner that removes rust, scale, paint and oils. Oakite Rustripper is the alkaline material that removes rust and scale with complete safety; cleans off metallic smuts, light shop soils and discolorations. Bulletin 9651 gives complete information. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

For more data, circle 51 on colored card.

Armohide Coating is a tough, textured finish resembling leather. Has good abrasion and chemical resistance. Can be applied to assembled metal parts and prodnucts; covers all edges making them smooth and free from sharpness. Sprayed and fused on the metal, it is applied at high solids in a thickness of 10-15 mils coating. No solvents are required. Armorhide bulletin and sample panel are available. John L. Armitage & Co., 245 Thomas St., Newark, N. J.

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Graining in Two Colors, on both sides with one pass on panels, can be accomplished with the Hamant Model DDV-2 vertical graining machine. Reproduces beautiful grain finishes on practically any flat surface. The Hamant Tool Co., Inc., 502 Warren St., Dayton 9, Ohio.

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Hydra-Spray Airless is being profitably use by many industrial spray painters. Paint is kept circulating and is only drawn into the Hydra-Spray as it is used. Overspray and bounce-back are eliminated and you get complete, uniform coverage over rough or porous surfaces, with high-speed application. The Gray Co., Inc., 23 Graco Square, Minneapolis 13, Minn.

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Control Paint Overspray the inexpensive effective way. R. P. Paint Arrestors are disposable air filters which trap overspray solids before they reach the exhaust stack, therefore reduce fire hazards, damage to adjacent property, and disagreeable and time-consuming maintenance work. Easy to install, remove and replace in any size or type of booth. Research Products Corp., Madison 10, Wis.

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"Spex" Multicolor One-Coat Finish is featurer by V. J. Dolan & Co., Inc., 1830 N. Laramie Ave., Chicago 39, Ill. Provides a combination of two or more harmonizing colors in one coat with standard spray equipment. For finishing wood, metal, plastic, brick, concrete and all types of composition board. Dries like lacquer. Hides surface irregularities. New 1960 color card showing assortment of sprayed (not photographed) multi-color combinations available.

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Dip Coating, Flow Coating and spray coating systems can be engineered to give the best results in manufacturing and finishing your particular product. DeVilbiss engineers working with the customer research laboratory can plan a finishing system which is best for you. The DeVilbiss Co., Toledo 1, Ohio.

For more data, circle 57 on colored card.

Hydrotex Finishes for industry can be custom formulated for your product and finishing operation. Automotive products and aerosol products are our specialty. Hydrosol, Inc., Cicero, Ill.

For more data, circle 58 on colored card.

"Electro-Cold Stripper" will strip vinyls, alkyds, japans, hammers, primers, wrinkles, enamels and epons in minutes. Is non-flammable, requires no heat or current. Complete data and testing sample free on request. Allied Finishing Specialties Co., 2641 W. Grand Ave., Chicago 12.

For more data, circle 59 on colored card.

Agateen #27 is the crystal clear air-dry lacquer for use on watch dials. Bake coatings, dipping lacquers, spraying lacquers and air-dry lacquers are also available. Agate Lacquer Mfg. Co., Inc., 11-13 43rd Road, Long Island City 1, N.Y.

For more data, circle 60 on colored card.

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Performance Proved Spray Nozzles can lower your costs in washing, coating and rinsing. Have adjustable joints for quickly setting each spray to fit the work. Write for free catalog No. 24. Spraying Systems Co., 3240 Randolph St., Bellwood, Illinois.

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Clear Lacquer #2105 gives the finest protection to brass, silver, bronze, copper, etc. Other quality finishes include clear wood lacquers, lacquer enamels, synthetic coatings, novelty finishes, etc. Information, samples and recommendations will be supplied by G. J. Nikolas & Co., Inc., 2850 Washington Blvd., Bellwood, Ill.

For more data, circle 62 on colored card.

Complete Paint Finishing Systems, such as flow coating, dip coating or automatic spraying, metal cleaning and phosphatizing equipment, baking ovens, air replacement systems and conveyors can be engineered and installed by The Spra-Con Co., 3600 Elston Ave., Chicago 18, Ill. Catalog illustrates and describes many installations of complete paint finishing systems—small, medium and large.

For more data, circle 63 on colored card.

Cellulosic Vinyloid, Acrylic and alkyd coatings for wide range of specialized industrial applications are among the functional finishes manufactured by Varnish Products Co., 5206 Harvard Ave., Cleveland 5, Ohio.

For more data, circle 64 on colored card.

For more data, circle 243 on colored card.

Tack Cloth for Wiping Dust. It's available in different meshes, in envelopes, rolls or bulk. Lint free, wax free; no danger of spontaneous combustion. Bond Chemical Products Co., 2641 N. Clybourn Ave., Chicago 14, Ill.

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Bowles Color Drift Control System assures constant color uniformity. Ends costly color drift in product finishes, maintenance paints and packaging colors. If you face the difficulty of maintaining uniformity of color in liquid coating materials get details on the Color Drift Control System from the Bowles Printing Corp., 7 Third St., San Francisco 3, Calif.

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Instant Stripper—For metal or wood finishes. A non-flammable, non-toxic stripper which removes almost instantly, most finishes—enamels, either lacquer or synthetic (baked or air dried), paints, varnishes, etc. V. J. Dolan & Co., Inc., 1830 N. Laramie Ave., Chicago 39, Illinois.

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Drum Plug Wrench; steel or bronze, fits 95% of plugs or bungs in steel drums. Morse Mfg. Co., Inc., 763 W. Manlius St., East Syracuse, N. Y.

For more data, circle 68 on colored card.

Ovens for Drying, baking, preheating, dehydrating and many other industrial heating applications, can be engineered and installed for your particular product. Booklet entitled, "Radiant Heat—Applications Unlimited" is available. Fostoria Corp., Fostoria, Ohio.

For more data, circle 69 on colored card.

Industrial Finishes, specially formulated for your production line and products, give your products a salable appearance. For a perfect protective and decorative finish for your particular purpose, consult Rockford Varnish Co., Rockford, Ill.

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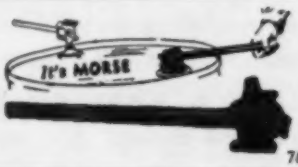

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Guardsman Furniture Finishes by Grand Rapids Varnish Corp., Grand Rapids 2, Mich., add beauty and salability to your furniture. Let a Guardsman salesman help you select the proper finish for your furniture line.

For more data, circle 71 on colored card.

Hooks, Racks or "Rejects" can be stripped clean of paint in from 5 seconds to four minutes. The Kolene stripping process conserves man hours and materials. Install a Kolene unit to place paint stripping in its proper relationship to moderen operations in your plant. Can be engineered for batch cleaning or for continuous, fully automatic conveyor systems. Kolene Corp., 12890 Westwood, Detroit 23, Mich.

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"RediRay" Modular Infrared Ovens fit any finishing system. Provide uniform heat with no hot spots; high efficiency with no bulbs, tubes or reflectors to get dirty, burn out or break; complete flexibility, adaptable to any conveyor system. Engineering Data Sheet No. 112 describes RediRay and its applications. Infra-Red Systems, Inc., 240 Route 23, Riverdale, N. J.

For more data, circle 73 on colored card.

"Lucite" Acrylic Enamel is the lustrous finish formulated in a variety of decorator colors. "Lucite" stays bright longer, resists printing, scratching, chipping, cracking and burning. Water rolls off, dirt slides off, assuring easy maintenance. Change-over from conventional topcoat to "Lucite" Enamel is accomplished without changes in the finishing line equipment. E. I. duPont deNemours & Co., Inc., 2502 Nemours Bldg., Wilmington 98, Dela.

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Hi-Sol Enamel Reducer offers substantial savings in ready-to-spray paint costs. In addition, sagging is practically eliminated and a smoother, better looking finish obtained. Potter Paint Company, Cortland 1, New York and Cambridge City 1, Ind.

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Steinemann Coater applies all finishes uniformly to practically any size or shape of product. There is no waste; unused material is recovered by a recirculating system. For additional information write Wilco Machine Works, Inc., Municipal Airport, P. O. Box 3722 Z, Memphis 14, Tenn.

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Exposure Test. Actual weathering, corrosion and sunlight tests, direct and under glass for quick predetermination of durability and permanency in southern Florida by South Florida Test Service, Inc., 4301 N. W. 7th St., Miami 34, Fla.

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"Acro-Flex" is the acrylic-enamel flexible, metal-decorating coating that weathers well, retains its color and stays glossy bright. Resists chemical action, chipping and abrasion. Can be used successfully on any metal. Gordon Bartels Co., 2600 Harrison St., Rockford, Illinois.

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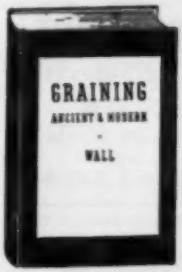

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Ovens for Industry, industrial fume and dust removal systems, washers, spray booths and gas-fired ovens can be designed, built and installed by Gallagher-Kaiser Corp., 6195 Selkirk Ave., Detroit 11, Mich. Complete engineering analysis of your job requirements and a General Catalog is available.

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Tack Rags for use prior to painting, to wipe off and hold dust and dirt particles too small to see, but which might leave a blemish on the final coat of paint or finish, are available from Ideal Chemical Co., 1499 Dean Drive, South Euclid 21, O.

For more data, circle 81 on colored card.

"Gripalloy" Primer for 25 Metals is available in black and colors; excellent adhesion . . . and resistance to salt spray and solvents. Tenax Finishing Products Co., 390 Adams St., Newark 5, N. J.

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For more data, circle 245 on colored card.

"Hammermark" Finishes are available in colors and have the function of hiding imperfections. Are impervious to duplicating inks, cleaning and office chemicals, are mar-proof. Available in bake and air-dry and in all pearlescent colors and shades. Sample panel available. Advice your method of application. United Lacquer Mfg. Corp., Linden, New Jersey.

For more data, circle 83 on colored card.

Spray Nozzles for Metal Finishing are available in a wide variety of flow rates, spray angles, pipe sizes and materials. Each nozzle is precision machined, calibrated and tested to insure efficient operation and uniform performance. Catalog 33A gives full details on spray nozzles to improve your metal finishing operations. Delavan Mfg. Co., West Des Moines, Iowa.

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"Perj" is the low-foam purgant that does away with hand scraping, clogged nozzles and burned out motors. Cuts 75% off of water-wash paint booth clean-up time. Perj is only one of the many cleaning compounds for the metal-working industry. DuBois Chemicals, Inc., Broadway at 7th, Cincinnati 2, Ohio.

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Automatic Spraying Systems designed by Schweitzer Equipment Co., 3764 Ridge Road, Cleveland 9, Ohio, give fast, efficient service. Custom designed machines and a complete line of standard types are available. Specialized equipment can be designed and built for your own requirements.

For more data, circle 86 on colored card.

Industrial Paints and Maintenance Finishes can be made to your specifications to solve your finishing problems. Complete line of primers also available. Put your finishing problems up to us. Daley Paint & Varnish Co., 1346 Concord Place, Chicago 22, Ill.

For more data, circle 87 on colored card.

"New Period" Finishes for both wood and metal are long lasting and easy to apply. Fillers, stains, lacquers, sealers, lacquer enamels and synthetic enamels are among the New Period finishes available. Working samples at drum price. New York Woodfinishers' Supply Co., Inc., 109 Imlay St., Brooklyn, N. Y.

For more data, circle 88 on colored card.

Formulations for Plastic Products have been created by Randolph Products Co., Carlstadt, N. J. Spray lacquer coatings equal to every plastic coating problem, particularly adhesion and the tendency to craze, have been formulated in decorative color contrasts, to give a lift to sales results.
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Burn-in Tools for making quick and skilful repairs to nicked, dented or scratched finishes. The Op-Al Electric & Mfg. Co., 3133 Martindale Ave., Indianapolis 5, Ind.
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BoGard Finishes can be formulated to meet any conditions . . . . to match any existing color . . . . or tailor-made to give you a new and exclusive color and finish all your own. We are specialists in the solving of difficult problems. Body Bros., Inc., Bedford, Ohio.
For more data, circle 91 on colored card.

Paint Testing Instruments and equipment take the guesswork out of paint testing. Write for descriptive catalog. Gardner Laboratory, Inc., P. O. Box 5728-FT, Bethesda, 14, Md.
For more data, circle 92 on colored card.

Collapsible Tube Finishes by Cosden Paint Co., Beverly, N. J., are color-perfect and adaptable to severe flexing, twisting and crimping. Coatings are non-toxic and chemical resistant; can be applied by various application methods.
For more data, circle 93 on colored card.

Multi-Color Odorless synthetic finishes give a color-on-color coating that is chemical resistant, fire retardant, marproof and mist free. Will not run or sag. Can be applied to wood, metal and composition surfaces. Industrial lacquer-type finishes on two or more colors are also available. Titanine, Inc., Morris & Elmwood Aves., Union, N. J.
For more data, circle 94 on colored card.

"Uni-Finisher" applies a light abrasive action to metal, wood or plastic sheets. Can be used for metal polishing operations, sealer and filler coat sanding and polish sanding. Machine can be supplied as integral part of automatic conveyorized finishing system. The Union Tool Corp., 818 N. Detroit St., Warsaw, Ind.
For more data, circle 95 on colored card.

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Speedip Centrifugal Coaters for enameling and lacquering uniform or irregularly shaped parts, automatically dip and then spin off all excess coating material. Operations are automatic within the machine. Send your product to be coated; also get information on how the Speedip coater can save you up to 80% in material. Ronci Machine Co., 2 Atlantic Blvd., Centredale 11, Rhode Island.

For more data, circle 96 on colored card.

Baking Enamels by Adelphi Paint & Color Works, Inc., Ozone Park 17, N. Y., are formulated for your exact requirements. Adelphi's laboratory staff of expert paint chemists can formulate baking enamels that will cut your costs, and solve your finishing problems.

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"Rez-N-Lac" is a lacquer for high impact styrene. Can be applied to all types of modified styrenes, acrylics and ABS resins. Sprays easily and dries rapidly, produces a smooth, tough high-gloss finish. Comes in a full range of standard colors or special colors can be matched at no extra cost. Available in quantities of quart, gallon and 55-gal. drums. Samples available on request. Schwartz Chemical Co., Inc., 50-01 2nd St., Long Island City 1, N. Y.

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Portable Centrifugal-Type electrostatic hand gun, for both metallic and non-metallic coatings, for indoor and outdoor work, is described in a free bulletin, from Ionic Electrostatic Corp., 111 Monroe St., Garfield, N. J. Model 10 can apply water-base and highly conductive coatings, wraps paint around corners, is easily installed in existing systems. Patented automatic spray systems are also available.

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Dacronite 5600 Crystal-Clear Water White Lacquer is a ready-to-spray clear lacquer, alkyd fortified, for use over blond stains, light fillers, light natural woods, Masonite and metal. Has cold-check resistance, and is resistant to scuffing and scratching. Produces a finish of good color retention and one that will not ring from alcohol, water or hot dishes. James B. Day & Co., 1872 Clybourn Ave., Chicago 14, Ill.

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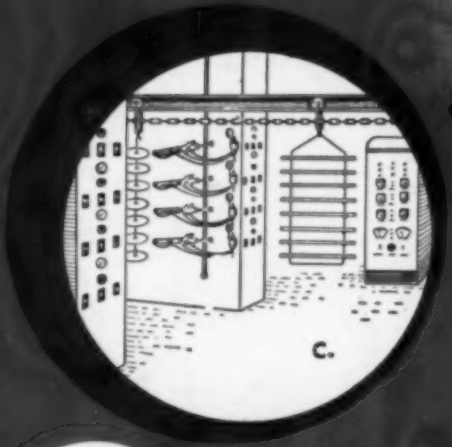

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